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EDMUND RUFFIN, EDITOR AND PROPRIETOR.—T. W. WHITE, PRINTER.

ON SURFACE DRAINING, AND THE CULTIVATION OF CORN.

To the Editor of the Farmers' Register.

Sir,—I promised you, some time ago, a communication on the subject of draining, confessedly one of the most important operations in husbandry. I now imperfectly fulfil that promise. It is my design to treat only of the mode of relieving land from the surface water, where it can be done by open ditches. I have had but little experience in regard to under-drains and embankments, and that little is not satisfactory. I shall briefly and incidentally touch on a few other matters.

I consider it the duty of every Virginian, at all conversant with agriculture, to contribute his mite, even though it be as small as mine, to the resuscitation of our ancient and venerable Commonwealth. Impoverished and mangled as she has been, she has still within herself all the elements of prosperity and happiness. Though a perfect system of husbandry may not exist on any estate within her limits, there are, nevertheless, many creditable approximations to it. If the good practices found here and there, few to be sure, and far between, can be collected and imbodied, as complete a code of agriculture may be formed, as would be desirable in the present state of our population, in reference to its nature and amount. This the Register may, and I trust, will effect.

The fields of Middle, and more particularly of Lower Virginia, are generally of considerable extent, with occasional low and wet places interspersed, which require ditches to render them arable. The custom anciently was, and it is by no means yet entirely exploded, to plough up to these ditches, so as to raise the earth on their margins higher than at a little distance off, forming effectual barriers to the escape of the water from the neighboring land. The corn rows ran up to these banks, the fertile strips along which were lost, as head lands. The rows traversing the entire field, necessarily embraced both wet and dry land; the ground was frequently worked out of order, and much injured; and the crops were inferior where they should have been best. The plan which I recommend, obviates these objections, and secures several advantages, which will appear in the sequel.

In order to carry this method properly into effect, the main ditches should be judiciously laid off. They should pass through the centre of the bottoms, or hollows, intended to be drained: the courses should be as long and as straight as possible; and where turns are necessary, they should be gradual, avoiding sharp angles. The ditches should be twice or thrice as wide at top as at bottom, or sometimes more, in proportion to depth; which much facilitates scouring them out, and prevents the sides from crumbling and caving in, under the influence of frost, as will happen when the sides are perpendicular. I have improved many of the old ditches on my estate, by straightening and remodelling them, where it could be done without much labor. The earth deposited on the ditch banks must be thrown off, with hoes or shovels, into the lower places, so as to equalize the surface; and with the same view, and to produce a declivity towards the ditch, one or more ploughings off from it will often be found advantageous, when practicable.

The ditches having been arranged, ridges of five and a half feet for corn, or beds of eleven feet for wheat, should be laid off, parallel to the ditches in their whole extent, and multiplied on both sides, so as to reach quite up to the adjacent high land. The valleys are all thus detached from the drier portions of the field, and may be worked at the proper time and in the proper order. They are put in a state to be benefitted by the grips or cross drains, which convey the water from the finishing furrows to the main ditches. These grips are about a foot wide, and are made with great despatch with the plough and hoe, aided by the spade; or if the courses are short, by the spade alone. They should be sufficiently deep to drain the water thoroughly from the furrows; and to prevent their washing, pieces of plank or durable wood, with channels cut in the middle, to permit the passage of the water, may, when neccessary, be let into the earth, at their entrance into the ditches. The grips should cross the beds diagonally, and incline down stream, at an angle of [redacted] forty five degrees, unless some local peculiarity requires a deviation, so as to get the advantage of any descent which that distance may afford.

By this method, a different cultivation both of corn and wheat, may be adopted, from that practised on the highland, where a more even surface should be preserved. The corn plant has the advantage of an elevated ridge, well drained. Two of these ridges may be united for wheat, which should be sown in low situations, at the commencement of seed time, or as soon thereafter as the state of the ground will permit; so as to enable the plant to take good root before the frost sets in, and by its forwardness, to have an additional chance of escaping the rust, so often fatal to that crop. A better opportunity too is afforded, of laying the ground dry before winter; and an idea prevails, that early sown wheat, though by no means exempt, is less liable to the depredations of the fly on low, than on high land.

I have mentioned the union of two of the corn ridges of $5\frac{1}{2}$ feet, for wheat. They may, when the field reverts to corn, be easily singled, in the following manner. The eleven feet beds should be broken up as early as possible in the fall or winter—the former much better—and simply reversed. The cross drains and ditches should be opened, to dry the ground and give it the advantage of frost, the ameliorating influence of which is lost on land that is sobbed, and the decay of the subverted vegetable mass retarded. In the spring, as late as it can be deferred, these beds may be reploughed with two horses; the plough passing up and down the bed, just so near the water furrow as that a little earth may occasionally roll in, but not

enough to fill it. The ploughman proceeds, throwing *out and out*, as it is called, and finishes in the middle. The narrow ridges are thus restored, an effectual harrowing given, and the corn in due season is planted, in furrows opened on the ridges at such distances as the strength of the land will permit. This reploughing is, however, improper, if a considerable decomposition of the vegetable matter has not taken place. In this event, or when manure has been turned under, it is better to have two rows of corn on each bed.

The earlier land intended for corn is ploughed, and the more completely concealed the vegetable covering, the better. The latter may be effectually and conveniently done by a heavy chain fastened at one end to the screw bolt that passes through the beam immediately above the mould-board, and at the other to the hook at the end of the right swingle tree; or a round piece of heavy wood, a few inches in diameter, with a small chain at each end, answers equally well. These trail along the furrow, and attached to a good plough, will cover the most luxuriant growth of weeds. I deem it so important to *break up* corn land early, that I do not hesitate to perform that operation from the middle of November, or as soon as the wheat is sown, until the 15th of January, even though the ground be rather wet, if the comfort of the men and mules will permit. If the ground be well drained immediately afterwards, and there occur the usual portion of frost, the land will soon lose its adhesiveness, and become friable and mellow. The heat of the sun is not then sufficient to *bake*. After that period the farmer should be cautious not to plough his land, unless it be dry enough to crumble. Overseers are usually very impatient. I have known one plough with the water following in the furrow. To be forward, seemed to be the great desideratum, without regard to ulterior consequences.

In ploughing land that requires to be ridged, it is best to commence farthest from the ditch, so that the cross drains below may not be filled up, and the passage of the water obstructed, in case of interruption by bad weather. So soon as the operation is completed, the drains should be re-opened.

A foreigner, in the service of my family some years ago, removed several of the high ditch banks that had been accumulating for ages, and by giving the proper slope, rendered them capable of being crossed by the plough. But to this there were many objections: the work performed by the spade, or by the plough and hoe, was Herculean; the ditches were filled up by being ploughed across, and much labor was required to clean them out. Though wide beds were used, they frequently ran up and down hill, to the great prejudice of the land, which was in several places much gullied.

I have recently commenced the cultivation of the locust and mulberry on the edges of the ditches, and promise myself much benefit from the practice. I have understood that an eminent farmer, the late Mr. Philip Tabb of Gloucester, obtained a large supply of the timber last mentioned, by *permitting* it to grow in those situations. Mulberry seed, washed when gathered, and dried, vegetate perfectly well; those of the locust, require immersion, for two or three days before they are sown, in hot water, to soften their hard shells, when they sprout as readily as peas. The young trees are kept in the nursery for two years to accelerate their growth, afford them protection, and give them tall straight bodies. They should then be trimmed up, and planted close together to prevent low spreading tops, on ditch banks, the borders of fields, and on any unoccupied ground capable of producing even a few of them.

In ditching hard, turfy or rooty land—and more particularly in digging holes for posts—the gripping spade will be found a useful implement. It is made of a broad piece of iron, hammered out and hollowed, so as to resemble a scoop, with a socket above to receive the handle, and a steel edge below to make it cut. It is heavier than a common spade, and rather narrower, but capable from its concave form, of holding as much earth, if hard and tenacious. In old, friable land, it is inferior to the common spade, and is only recommended in the cases above mentioned.

You have done me the honor to ask my method of cultivating Indian corn. A communication which you have recently received from a neighboring source, (No. 7, p. 395) leaves but little for me to add. It may not, however, be amiss, to give a brief summary. Plough deep, according to the nature and improvement of the soil, and early; apply all the manure that the utmost diligence can collect, for no plant requires it more; harrow, but never re-plough in the spring, except where you desire narrow ridges, or mean to put manure; plant early on warm and light, but later on stiff and cold soils; use an abundance of seed corn; plough from the corn in the early stages of its growth, and moderately up to it in the latter; let the cultivation be first deep and close, but shallower and farther, as the plant increases in size. Let the last, or perhaps the two last ploughings, be done by alternate rows throughout the field; so that, if there be drought, the plants may not be checked, by having the roots severed on both sides; and if there be rain, all may be benefitted by being at least partially stirred; and finally, after harvest, instead of laying by with the hoe, thrash your wheat, sell and deliver it, and pocket the proceeds, if you require them as much as I generally do; then let the hands go over the corn fields, weeding out grass that may have escaped the plough, and digging up the ground about the backward and replanted corn, so as to give it an opportunity of forming. I observe little, if any diminution of the corn crop, from an abandonment of the old system, much economy of labor, more satisfaction in the disposal of the wheat crop, and a better preparation of the corn land for wheat. I thrashed in the year 1830, seven thousand seven hundred bushels of wheat—almost the entire crop—with two machines, in the month of July.

I have now, I fear, tired both editor and reader, and will conclude this protracted essay.

A Planter of the Lower James.

January, 1834.

HIGH PRICED LAND.

From the Poughkeepsie Journal.

A farm one mile from Norristown, (Pennsylvania,) of 155 acres, was sold on the 7th ult. for $252 per acre. The purchaser has since refused $5000 for his bargain. Norristown is a small village, situated on the Schuylkill river, 17 miles from Philadelphia.

TOBACCO CULTURE. NO. I.

THE PREPARATION NECESSARY FOR A CROP OF TOBACCO.

To the Editor of the Farmers' Register.

Farming and planting are so intimately connected, especially in Middle Virginia, it seems desirable, in order to make the Register acceptable to every part of the state, that, it should contain some information, on the subject of the tobacco crop. I therefore propose in a series of essays, to give you my views and practice, 1st, as to the preparation for the crop; 2ndly, cultivation of the crop; 3dly, cutting and curing; 4thly, stripping and pressing; and 5thly, the advantages and disadvantages of the crop. It is with very great reluctance, I assure you, Mr. Editor, that I undertake to *break ground*, on a subject hitherto untouched by any of your correspondents, and would cheerfully submit it to abler hands, but, that there seems, to be a backwardness on the part of planters to communicate on this subject. I trust therefore, as I have undertaken it, *solely* for the benefit of the planting interest, that wherever any improvements have been made upon my management, the persons discovering, or practising them, will please furnish them for your columns, that I and others may receive the benefit of them, and thus realize the advantages of a comparison of views and practices on this subject.

It may not be amiss then, in writing a number of essays on this subject, to give the origin of the plant in this country. "Tobacco, (Nicotiana) so called from Tobago, one of the Caribbee Islands, was first introduced into England, and thence into Europe, by Sir Walter Raleigh," from whence, it was brought into this country by its early settlers: from which time, it has been largely and assiduously cultivated, always forming a large item in the list of our national exports.

It may be proper here also to remark upon the different varieties the plant has assumed since its introduction into this country, owing I presume, to our diversity of climate, cultivation, &c. The varieties that have come under my notice, have been called by the following names, to wit: the blue Prior, the big Frederick, the little Frederick, the Daniel Jones, the Oronoko and the Kite-Foot, nearly all of which have taken their names from the persons, who first introduced them into this part of the state. It is not deemed necessary, to enter into a particular description of each variety; suffice it to say, however, that the blue Prior, has my decided preference over all other kinds, on account of its smallness of fibre, silkiness of texture, largeness of leaf, and being easier to cure, than most of the other varieties. It has but two objections, that I know of, that is, it is about ten days later in ripening, and will not yield as much in weight, on *ordinary* land, as the big Frederick, and the Daniel Jones. But to give these two objections their full force, it has still a decided preference in my estimation, and, I therefore recommend it, to all planters, living on the Roanoke, or its tributaries, who have not made a trial of it.

These things being premised, the first and most important object, towards preparation for a crop of tobacco with the judicious planter is, to burn and sow, a sufficiency of good plant land, as it is impossible, to make a fine crop without a plenty of plants, in good time. In order to effect this object then, from the first of February to the middle of March, burn and sow all the land you design for plants, which is done in the following manner. Select some moist spots, of rich virgin loam, moderately mixed with sand, and clean them off nicely; timber, bushes, leaves and all, without grubbing the bushes. Then lay down some small poles parallel with each other about two feet apart, for skids to lay the wood on, so that it can be moved easily. Lay down your wood in a pile, across the patch, sufficiently large to make a strong fire, which should be made to burn well, about one hour, before it is moved; then with long wooden hooks, (or what I have found better,) iron hooks, fastened on long handles of wood, let the hands place themselves in a row, in front of the fire and draw the wood forward so as to burn the adjacent ground, covering about four feet, and so on, until the whole patch is burnt. As soon as the ground is sufficiently cool, take two horses, with a sharp coulter, and plough it deep and close both ways, then pick off all the roots and rake it over, until the surface is smooth and level, when it will be ready to sow. Having mixed your seed thoroughly with ashes, plaster of Paris, or nice fine sand, sow it over carefully twice; putting on about four table spoonfuls of seed, to every hundred square yards. Then tread it down close, and smooth all over and cover it thick with straight brush, with the tails of the brush to the sun at twelve o'clock, so that the sun may shine on every part of the patch at its greatest heat. Dig a trench around it if necessary, to keep off the water in hard rains, and your patch will be complete. I prefer coultering to the common method of hoeing, as less of the soil is turned under, and it is broken much deeper, and thus is better prepared to resist drought, or excessive wet, as the water sinks below the roots of the plants and is retained longer, though not sufficiently near to drown. If your plants come up well, you may calculate on a thousand, from every square yard. As soon as the danger from frosts is over, the brush should be thrown off, and the plants manured from time to time with the finest and strongest manure from the stables, until they are large enough to set out, which should be, from the 10th of May to the 20th of June. Standing patches sometimes succeed well in particular situations, for a number of years, though very rarely, the plants being always later, and much more liable to be destroyed by the fly. Since we have cut down all our best lands, in this section of country, it has become a matter of considerable difficulty to raise plants in time: and that difficulty is augmented ten fold, by the ravages of the fly, which attacks them sometimes in swarms—principally during the month of April, while they are small, and frequently, if they are not checked, will destroy a patch in a few days. Various expedients, have been adopted, and many remedies tried, generally without success. I have, however, found leached ashes, an effectual check to them, when they are sprinkled over the plants until they are completely covered with them: they also serve as a valuable manure. This remedy should be repeated frequently, as the ashes are liable to be settled down by the dew, and washed off by the rains. The ashes should be well leached, and entirely dry, or else they will scald the plants, and not answer the purpose designed. Land should only be burnt hard enough to kill all grass seed,

and roots that may be in it, as hard burning evi dently makes the land produce vegetation slowly, which will also be the case, if the land is wet, when it is burnt with a strong fire.

I come now to the preparation of the land, for setting out the plants, which depends on such a variety of circumstances, that I hardly know where to begin. That is, whether the land is new or old, clean, or covered with vegetation. I would say however, that the two grand essentials in preparation, is to make your land rich, and plough it until it is well pulverized, and then put it up into large hills, three feet apart each way, being careful to break the step of every row, so that the rows will run every direction. This is designed to give every plant the advantage of the sun, in ripening; whereas otherwise, the bottom leaves of the plants would be shaded by the plants immediately opposite.

This may be thought by some, cultivating too close: but experience has taught me, that more tobacco in weight, and of finer quality, can be made at this distance, on rich land, than any other. Enlarge the distance, and you increase the size and coarseness of the plant; *vice versa*, reduce the distance to three feet, and you diminish the size, and increase the silkiness and closeness of texture, with little or no diminution of weight. In order to cultivate tobacco profitably and judiciously, it is as necessary to have shifts, as it is for corn. I would say then, lay off your tobacco land into three shifts, to be kept rich with clover and herdsgrass: or if you have not land enough for three shifts, divide it into two, and keep them up by sowing on oats or buckwheat, and ploughing it in, as soon as the crop comes to maturity. The three shift system, is however, decidedly preferable to the two. For instance, you may get a wheat crop after the tobacco, and you may either sow on your grass, or clover seed, with the wheat, or wait and sow it on the stubble, immediately after cutting off the wheat, which I believe is best, as the seed is not liable to be killed by the frosts, or choked by the wheat. They come up quick, grow off well, and will be thicker and forwarder, than if sown with the wheat. Again, upon the two shift plan, you must be at the expense of ploughing the shift, sowing on oats or buckwheat, and then turning it under when ripe. This however is much better, and cheaper, than the common mode of manuring, as vegetable manure makes tobacco of finer quality than any other substance whatever. If either of the above plans are adopted, however, the planter can apply all his manure, to his corn or wheat crop, and thus he will make larger and better crops of every description, and at the same time, improve all his lands. I cultivate three shifts in tobacco, and four in corn; and find since I adopted that system, my lands have improved, beyond my most sanguine expectations. Your land then being prepared as before described, and your plants having attained sufficient size, draw them, when the ground is quite moist, and set them out, in the hills, and every thing necessary, preparatory to the cultivation of the crop, will have been completed.

G.

Wardsfork, Charlotte,
Jan. 28th, 1834.

For the Farmers' Register.

BLUE GRASS.

Of all the pests that wheat land is subject to, blue grass is the worst; and I believe the only remedy heretofore discovered, is to cultivate the land in a hoe crop, such as corn, &c.; and even then, it requires a very dry summer, and extra working of such hoe crop, to be at all successful. And after all it is sure to return to the land in a few years, so as to require a repetition of the hoe crop every now and then.

I this summer made an experiment without a hoe crop, which proved successful with a field of blue grass, as completely set, as it could possibly be. I intended to make one experiment, and made another unintentionally.

My object at first was to give the land an English fallow; that was, to plough the land up in the spring, and keep it well cultivated throughout the summer with the double shovel ploughs, with the view of killing the blue grass. I should have preferred to have made a crop of corn upon it, but I could not spare the labor; so I thought I would substitute this mode, as requiring much less labor.

I ploughed up the land with large three-horse ploughs, between the 10th of May and the 10th of June, intending to commence with the double shovels, as soon as the blue grass began to grow, and to continue to use them, as required, throughout the summer: but I never had time to double shovel it at all, and I thought my experiment was thrown away. However, during the months of June and July, (May and June, having been excessively wet,) a heavy crop of *crop* grass put up, and although the blue grass had begun to grow a little, the crop grass got the better of it, and maintained the advantage during August and September, two of the driest months ever known; and at last destroyed the blue grass, and gave me the cleanest field for wheat this fall, I have had for several years.

This result may have been owing to the peculiar season, but it was completely successful. The season was an unusual one; during the months of May and June, it was eternally raining, and from about the 2d of July, until October, we had no rain at all, and this may have produced the effect. Possibly, in another season, it might not have the same effect; but I cannot help thinking, or at least hoping, there was something in ploughing up the land just before the season for the crop grass to begin to grow, and that it might prove successful generally; for the crop grass is very powerful in smothering any thing it grows with, where it is allowed to take place. At all events, I shall give this experiment another trial next summer, and will then communicate the result to you, and my only object for mentioning it now, is, the hope that some other person may be induced to make a similar experiment, as several experiments are always more satisfactory than one. H. C.

November 1, 1833.

[The result of this chance-made experiment is at least interesting, and may lead to profitable practice, if the remarkable growth of grass was not owing (as our correspondent supposes) to the peculiarity of the season. The *crop grass* takes its name from growing generally in land under tillage, and it will not grow, in any quantity, except where the plough has been used in the

early part of summer, and then it soon covers the surface, if the season and condition of the soil are favorable. It makes delightful hay, and would be a very valuable crop for the Southern country, but for its requiring the indespensable preparation of well ploughing the soil, and the uncertainty of the growth afterwards.]

For the Farmers' Register.

SPECIMENS OF CALCAREOUS MANURES.

We have received and examined various specimens of earths, from beds of fossil shells, and other calcareous deposites. Several specimens contained less than two per cent of carbonate of lime, and of course are worthless as calcareous manures. The proportions of calcareous matter in other specimens, which had nothing remarkable in their location, or uncommon in their quality, have been reported by letters to the individuals who sent them, and who alone are interested in their value. The following are here more particularly described, because either the location has been of recent discovery, or other circumstances render the facts of some importance to the public.

1. Marl, or bed of fossil shells in Middlesex, from which Mr. Dormer Oaks has been taking large quantities to Maryland for sale, as stated in Mr. Roy's letter, (Farmers' Register, No. 9, p. 534.) It is almost white, and the shells are so reduced as scarcely to be visible. The proportion of carbonate of lime in the specimen examined, amounted to 83 grains in the 100.

2. Lumps of a calcareous deposite on the land of Major Peter Jones of Lunenburg, selected and sent by Wm. H. Macfarland, Esq. To the eye, they appeared similar to the concretions scattered through the argillaceous marl discovered in Prince Edward, by Dr. Morton; and which was described in No. 1. This specimen contained 70 per cent of carbonate of lime.

3. Lime rock, or fossil shells, forming stony masses, from Lenoir County, N. C. 48 per cent.

4. Another extensive body from the same neighborhood, 75 per cent. These are from the lands of Col. Isaac Croom, who reports that these mineral riches are most abundant in that part of North Carolina. He is now beginning to make the first use of them.

5. A box of loose and small fragments of fossil shells, from Nansemond, of yellowish brown color, as if tinged by rust of iron. The nature, and the great richness of this mass was so evident to the eye, that no examination would have been deemed necessary, but for the remarkable want of information on this subject which prevails where this rich manure abounds. The following letter, which accompanied this sample, shows that the people who possess these treasures, are deplorably in need of instruction as to their proper use. This marl contains 81 per cent of carbonate of lime—and its great strength, and the profuse manner in which it was spread on the land, doubtless caused the injury, experienced from its limited use.

[Extract of a letter to the Editor.]

Chuckatuck, Nansemond, Jan. 1st, 1834.

I have taken the liberty to forward you a sample of what we here call marl, and earnestly request of you, that you will test its quality, and inform us through the medium of your Register, whether or not it possesses any valuable quality as a manure, or retainer of manure. Our neighborhood abounds in this earth; and in addition to the great abundance of it, it is found very near the surface, and is very easy of access. A number of persons have made trial of this marl, but from our ignorance, or the injudicious manner in which it was applied, have suffered injury, instead of obtaining the benefit expected. Its use has therefore been entirely abandoned here. Your attention to this subject, will no doubt, greatly benefit a part of our state, where nature has done much, but which negligence has brought to extreme poverty.

ON THE CULTURE OF COTTON, AND THE ROT.

To the Editor of the Farmers' Register.

I have read the Farmers' Register with pleasure, and feel so much indebted to it, for the information received, that I am induced to give in my mite, in as short and brief a manner as possible, hoping it may be a benefit to any new beginner, who may think proper to follow it the present year. I have been a cultivator of the cotton crop for thirteen years, and have tried all reasonable suggestions by others, with my own, till 1828; from that time, I have pursued the following plan. I haul out my coarse manure and scatter it on the land, where it is most stiff and close, and then use a one, or two-horse turning plough to plough the manure in, but am careful not to break the land more than three or four inches deep. I then haul out my fine manure on another part of my cotton land, and let it remain in ox load heaps, till I can finish ploughing the land with the same turning plough, or a trowel hoe plough, as I may find most convenient, and then scatter the fine manure, and harrow it in with a five-tooth harrow.

The next operation, is to prepare for sowing the seed, which is about the 10th of April—not sooner. I first mark off single furrows with a trowel-hoe plough, to bed on, from three to 3½ and four feet apart, as I may think best for the land, the poorest three feet, and the richest four. I then run one furrow, with a one-horse turning plough, on each side of the single furrow, to form the bed on the light land that is easy to manage, but on the stiff or stumpy and rooty land, I run two furrows on each side of the single furrow with the same turning plough, to form the bed—and at the same time, guard against turning up the coarse manure as much as possible, to prevent its being in the way of future operations. But the fine manure will become well mixed in the soil, so as not to evaporate or sink, as much as if it were on the surface of the earth, or turned under. I then open the beds on the light land, with a piece of wood fixed in a plough nearly in the shape of a trowel-hoe helve; but on stiff or stumpy and rooty land, I open with a small trowel hoe, or cutter, and then sow the dry cotton seed nicely in the opening furrow, and on the light land use a block, about eighteen inches long, six by four inches, with a helve fixed in it on one of the six inch sides, like the helve of a trowel hoe, and hollow it out on the lower front edge or corner, and on the under side, and fix it in the beam of a one-horse plough, to cover the seed. On the stiff, or stumpy and rooty land, I cover with the feet, or a small hand rake, which is preferable.

As soon as the seed are well sprouted, so as to begin to crack the earth above them, I run the same covering block over the beds on the light

land, to destroy all the small grass, and to assist it in coming up, and then run one furrow between the cotton rows, with a five-tooth harrow. On the stiff, or stumpy and rooty land, I continue to run the one furrow, or two if it requires it, with the same harrow, and follow it with the hoe hands, and trim or scrape the ridge down nicely, which can be done, in a very short time, and is the main thing to give the cotton an early start, and to keep me ahead of the grass.

When the cotton is up, and grows to have four leaves, including the two it comes up with, which will be about the middle of May, then is the time for ploughing it again, and thinning. I run twice between the cotton rows with a skimmer, to shuffle a little dirt in among the cotton immediately before the thinners, like a grubbing hoe, turned bottom upwards, and a half circle sixteen inches long, three inches wide, and a quarter of an inch thick, with the front edge sharp, to be rivetted on the top of the hoe about three inches from the point. Here the early scraping over the ridges, saves the chopping out the grass, and crippling the tender cotton plant; and the attention paid to sowing the seed, enables me to thin all my cotton with the hand, and gives me a good stand of cotton, (without which, no man can make a full crop,) leaving the stalks on the poor land four inches apart, six on the medium, and ten on the strong—or as near these distances, as is practicable. I thin the first part of the forenoon, and the last part of the afternoon, so as to be thinning two-thirds of each day, and the balance of the day, chop over the cotton that has been thinned with the weeding hoes, where the skimmer does not put it in good order, especially on the stumpy land. This brings about the 10th of June. I then give a ploughing as early as I can, with a one-horse turning plough, four furrows between each two cotton rows, which will throw the dirt of two furrows on each side of each cotton row, to form a flat bed to each. This will bring about the first of July; and it will depend entirely on the weather, whether or not it will want more than one more ploughing; and that I do with a five-tooth harrow, with the teeth worn very short, twice in each plough row, so as merely to stir the top of the earth, to prevent the grass from putting out; and if I am induced to plough it again, I repeat with the same harrow, or skimmer as above named, but at each time am careful to avoid ploughing down the broad or flat bed, that each row may assist the horizontal trenches in conveying off the water from that time till the next spring.

When I cultivated cotton on the straight row plan, I gave my cotton a trowel hoe ploughing, running the same number of furrows, as with the above named turning plough, and at the same season or time of the year, and then finished ploughing the crop as above named, leaving the land as level as possible, to prevent its washing: but I found all I could do on the straight row plan, more or less unsuitable on hilly land. I make the hoe hands follow the two last ploughings, and trim and cut all that may be left by the ploughs, particularly at the ends of all the rows, and over the stumpy land.

The topping of cotton, I find necessary for several reasons—first, that it forwards the crop—2ndly, if it is a dry year, it stands the drought better, and makes more cotton; 3rdly, if it is a good cotton year, I make as much cotton, and have fewer bolts to pick out, which is a saving in labor. I observe the same rule for topping, that tobacco planters do in topping their tobacco. When the cotton begins to run up small, and grow longer from where one limb puts out to the other, than it did in its earlier growth, it is time to top, and if it is a forward spring, it will be as late to top cotton the 10th of July as it would be, of a late spring, to top the 1st of August, and will save the labor of suckering, if the cotton has not suffered a great deal from dry weather; but if it has, wait till the earth gets wet, after the above named stage of the cotton, (which will be a sufficient guard against suckers,) and then top.

I think it depends a great deal on the weather during the month of July, whether or not I shall have any rot in my cotton. If it is a dry month, or if there should be several rains during the month, and several days sun between the time of each rain, I shall expect little or no rot, but if there should be a very warm, wet spell of weather in July, I expect the rot as usual, particularly if there has been a little dry weather immediately before the wet warm spell of weather commences. This warm wet spell of weather, causes no doubt, too much sap in the bolls, and produces the rot.

I have no fixed opinion of my own, whether or not manure sinks or evaporates, as will be seen from the manner I put in my manure above, but believe it does both, while I believe it sinks most, as it seems to me, to be as reasonable for it to sink, as for the strength of ashes to sink or drip through a ley gum. I should be glad to get more satisfactory information on this subject.

Yours respectfully, RICHD. D. POWELL.
Brunswick Co. Va. Feb. 4th, 1834.

COLD WEATHER IN NEW ORLEANS.

From the Norfolk Beacon.

A commercial friend has politely afforded us the following extract from a letter dated the 4th inst. received by last evening's mail, from his correspondent in New Orleans. In the correctness of the information it imparts the most implicit confidence may be placed. The writer begins his letter by stating, that the weather, (at the time of writing) is the severest ever experienced in that section of the United States.

While the anticipated injury to the sugar crop is deeply to be lamented, there is much to console them in the reflection that such weather must have a salutary influence on the future health of the country.

"Last night was exceedingly cold and stormy, and though it would scarcely be believed that a man could freeze to death in this climate, (and perhaps none ever did before,) *five votaries of Bacchus* were caught napping in the street, and hurried to the narrow house in the arms of Jack Frost. The ground is converted from a jelly, a state it has been in ever since my arrival (some weeks,) to a rock; and the snow is now four inches deep. Previously a fire was not necessary in our offices. The change is so sudden that many persuade themselves it never was so cold before, *even under the North Pole.* The planters here think it will effectually destroy all the orange trees and cane, and I think they have good grounds for their fears."

EXTRACTS FROM AN ARABIC WORK ON AGRICULTURE, TRANSLATED FOR THE FARMERS' REGISTER.

[*Continued from No.* 9.]

To the Editor of the Farmers' Register.

University of Virginia,
1st Jan. 1834.

I have the pleasure to send you a part of the second article of the first chapter of the work you mentioned to me, which contains an account of the different soils of inferior quality, and the best mode of improving them. I have omitted certain parts I thought too absurd to be repeated, amongst which is the mode of improving and curing "hellebore land," which, the author says, is such as is rather wet, and smells of hellebore, and hence brings nothing but beans of an inferior quality. As a cure for this "infirmity" in the land, he recommends having a great number of fires "continually" burning all over the field; adding, however, that this is a dangerous remedy, for though it cure the evil, it sometimes leaves the (patient) land so weak that it will be difficult to bring it to strength again by manuring! For the credit of *Ebn-el-Awam*, it must be, however, confessed, that he quotes other authors for what seemed absurd to me, and that the "continually" is not the Moor's, but the Spanish translator's absurdity.

G. BLÆTTERMANN.

"There are two kinds of soil that require and deserve most the care of the husbandman: the fat or heavy, and the sweaty or swampy. The mode of improving them, in order to make them yield abundant crops, is the same for both. They ought, in the first place, to be fallowed six times at least, during the summer months—that the sun, by toasting the particles of which they are composed, may extract the noxious juices, and render them mellow.

"Such soils as are denominated thin or meager by agriculturists, and which have a sour and disagreeable taste, are not benefitted by often ploughing, but must receive frequent dungings in order to render them fertile. Frequent ploughing, without adhibition of dung, would ultimately convert such soils into a barren desert.

"Yambushad, however, advises farmers to plough thin or meager land several times about the vernal equinox, and manure it with any kind of dung, except that of mules, since this, he adds, is the very kind of improvement it stands most in need of, making it bring any thing; such land, thus improved, may be planted with grape vines, which will grow well, and bear excellent grapes for making wine. But in another place, this author, speaking of thin and meager land, seems to contradict himself when he says, that it should be less ploughed, but dunged more, than other land, as by too much stirring it, there would be danger of weakening it still more; that after it had been dunged and once ploughed, it should be seeded with barley, and if it lie convenient for irrigation, it should be very copiously watered during dry weather.

"The same author, speaking of sharp or saltish soil, says that it should be improved with cow dung mixed with straw, leaves and sweet virgin earth; also, that it should be seeded with peas, beans, and similar plants, whose roots do not penetrate deep into the ground.

"As to such soils generally called sandy, it will be necessary to examine whether they consist of sand alone, or of a mixture of sand and various earths. Should, on examination, you find the soil consist almost of pure sand, it may be improved by adding a sufficiency of clay and dung, as has been said before; but should much white earth be found among the sand, such a soil will be difficult to improve, for it is absolutely steril, unless you can change its whole nature, by adding plenty of horse or asses' dung, mixed with virgin earth of a hot nature. Sandy soil of a gray color, as it contains a good proportion of black mould, is easily ameliorated by a slight addition of any dung the farm yard affords. All these soils, being from their very nature mellow, do not want much stirring.

"Red soil, being naturally of a tolerable fertility, needs no particular mode of improvement, but the necessary cultivation, to keep in heart: it must be ploughed in autumn, but not deep. If it can be dunged before seeding it in grain, your crop will be the better and surer.

"There is certain bottom land of a gray color, rather compact in its texture, which cannot be said to be steril, as it will bring certain plants, but which, from its hard and dry surface in hot weather, seldom produces a crop of any thing, be it grain or vegetables. It will bring rice however, as the roots of rice going deep, find sufficient nourishment from the water which abounds in it at a certain depth. If such land can be irrigated in dry weather, it will greatly benefit the crop growing on it.

"Very black land of the same description is much better as to quality, but it often has the same inconveniences; by means of artificial irrigation you may grow very fine vegetables in it, such as cabbages, cauliflowers, cale, &c. Should you sow grain, you must not suffer the ground to get dry, else you will endanger your crop. Such land, however, if you can always keep it moist, in hot weather, will be more profitable to you by growing all sorts of garden plants in it, for transplantation, as they come very fast, and prosper uncommonly under the influence of heat and moisture.

"Soil consisting of a reddish clay, which cracks open in dry weather, ought to be improved by deep and frequent ploughings, in order to have its particles well toasted by the sun, properly mixed with those that are not so. Then manure it with dung, mixed with rotten straw of all sorts.

"There are certain mountain tracts whose soil, if soil it may be called, is of the consistency of stone, especially such as is called soft sand stone; its color is of an orange yellow, mixed with streaks of brown and black, and has a very thin crust of black vegetable mould on the surface, where here and there a stinted pine or cypress is growing, and which, during the rainy season, becomes green with a short meager grass, which is burned up with the first heat of the sun. Should you possess such land on your estate, let it not lie waste and useless, for it is nevertheless susceptible of great improvement, and will soon repay with interest all the trouble you may bestow on it. As it has been done in the mountainous districts of Babylonia, where such land abounds.

"The best mode of bringing such land under cultivation is, in the first place, to break it open,

during the summer, with heavy mattocks, knocking the clods fine as you proceed; or, what is more expeditious, with a strong plough, drawn by four strong steers, put side by side, plough it several times in all directions, going deeper every time: then with a heavy harrow, drawn by the same steers, break the clods as fine as possible. Do all this work during the cool of the night, and let your steers rest in the shade during the day; because they could not endure the great fatigue of the ploughing such land, and the heat of the sun at the same time, but would sicken, and perhaps die. Let your ploughman keep near him some fresh water in a bucket, for the sake of moistening with it the steers' foreheads and necks at every turn of the field, the which practice refreshes them very much, and makes them work with more alacrity. Parking your cattle and sheep on land thus ploughed, until you plough again, will benefit it very much, by not only dunging it, but also pulverizing the remaining clods under their feet. Plough it again in the month of October; the last ploughing it may receive in February or March, when you sow barley on it. After harvest, let your cattle and sheep run on it, to manure it with their dung. Give it afterwards three more ploughings, dung it before the third, sow it in wheat, and you may, with the assistance of God, expect a tolerable crop. Under good tillage, such land becomes more and more productive, in proportion as the soil will become more and more mellowed, from a more perfect pulverization of its particles."

A FARMERS' DIRECTORY OR CALENDAR SUGGESTED.

To the Editor of the Farmers' Register.

Will you permit a constant reader of your valuable Register to suggest in a few lines, a plan, which it appears to him would render your journal still more useful? I expect, sir, to be a farmer by *profession;* and am just entering on the threshold of the noble science of agriculture. I therefore endeavor to make use of every means of acquiring information connected with my pursuit in life: and as at present I depend almost altogether on the writers in the Register for that information, no apology certainly is necessary from me for troubling them with a *suggestion* (merely,) for its improvement. One of my greatest difficulties, or rather the point on which I am most ignorant, is *the exact and proper time and season* for preparing my grounds--sowing, gathering and taking care of my crops, &c. &c., or rather, the proper distribution of my time and attention to the various departments of farming. Now it appears that a manual or directory—a short one—say two or three columns—would obviate in a measure this difficulty. I would have the monthly manual state with some minuteness the various objects of the farmers attention during the month, including the plantation, garden, orchard, and indeed a general answer to the question, "what shall I do this month?"

Now I hope sir, that I am not *suggesting* too great a task to you or your correspondents: such is certainly not my wish.

Permit me sir, to add, that no one rejoices more than myself ("a plain blunt man,") in the fact that agriculture in Virginia is rearing its head, and assuming that prominent place which it merits among the liberal sciences—a place to which it was designed by Nature's God. Suffer me to add my feeble congratulations to you, sir, for the measure of success which has crowned your efforts in this great cause. May this spirit of improvement continue until "the desert shall bud and blossom as the rose."

A YOUNG FARMER.

Mecklenburg, Jan. 31, 1834.

[Such a Directory or Calendar as "A Young Farmer" requires, would no doubt be a desirable addition to the Farmers' Register, and may in some manner be supplied hereafter. But at this time, there are few individuals, who if attempting to occupy so wide a range of instruction, would not teach more of error than of true knowledge. All who now contribute to the pages of the Farmers' Register may be said to be aiding in collecting facts, and in testing their truth and value by discussion: and the facts so brought together, must be numerous and well established, to furnish sufficient materials for a useful and authoritative *Farmers' Calendar.*]

For the Farmers' Register.

BUCKWHEAT AS GREEN MANURE.

Observing four short queries in the last Register (No. 8, p. 476,) relative to buckwheat as an improver, I have concluded to answer them in a brief manner. In fact, it becomes one to be brief, when attempting to give his experience relative to a particular matter, and that experience is very limited. But limited as is my experience, what little I have is freely offered.

Answer to 1st query. I have made a few experiments to test the value of buckwheat as a fallow crop; but they have been too limited in extent, and too few, to be called at all decisive. Tyro as I am in agricultural pursuits, I have seen enough to convince me that two or three experiments should rarely if ever be considered as decisive of any new or doubtful matter, touching agricultural affairs. From two or three experiments made on good land, I lean to the conclusion, that a luxuriant crop of tory or (black) field peas, fallowed in the month of September or October, is preferable to a similar crop of buckwheat; although the difference is not great. From what I have read on the subject, I should judge that on poor land a green crop of buckwheat would be preferable, for a fallow, to one of peas. But I have not tried the experiment.

I cannot doubt, however, that the experiment of ploughing in two crops of buckwheat the same year, with the assistance of a bushel of gypsum to the acre, would be eminently successful. The seed should be sown in the spring, as soon as the weather will permit. A slight frost would kill it after it appears above ground. It will be very luxuriant, and have a plenty of ripe seed the last of June, or any time in July. Let the crop be then ploughed in, the ground harrowed and rolled, if a roller can be had. The seed thus ploughed in will soon appear above ground, and by the middle or last of September, a new green crop, from three to five feet high, will be ready to be fallowed for wheat or for corn, the next year.

I cannot answer the query, as to the comparative effects of clover and buckwheat on thin lands. But on common lands, if a fair comparison be

made, taking into view time and expense, and acting with a single eye to the improvement of the land, it seems to me there cannot be much if any doubt on the subject. Take the same amount in value, of clover seed and buckwheat, and of plaster, and act with the clover as you please, it is my belief, that at the end of the first year, with the two crops of buckwheat ploughed in, and the plaster, the land would produce as well, if not better, than it would at the end of the second year with the clover fallow. I have not tried the actual experiment, and perhaps my conclusions from what I have seen, are erroneous.

Answer to 2d query. As to this query, I can only give information as to the time of sowing seed here. If but one crop in the year is intended, it will answer to sow the latter part of June, or any time in July. I have tried the different periods, and have succeeded well with both. Perhaps from the middle to the last of July would be the best time here, especially if the season should be a moist one. As to the quantity of seed to be sowed on an acre, I think it is safe to assert, that there is no general rule on the subject. Producers of buckwheat differ as to the amount of seed requisite to the acre, and the amounts recommended vary from three pecks up to two bushels per acre. I have not been accurate, in ascertaining the precise quantity of seed sown per acre on my land, but have always directed not less than a bushel and a half of seed per acre to be sown, believing that a greater mass of vegetable matter would be produced by thick than by thin sowing.

As to the time of ploughing in the crop, I prefer to have it done when it has attained its full height, having much ripe seed, but still many blossoms. My own opinion is, although worth but little on such a subject, that the best time to plough in buckwheat or field peas, is when the crop covering the ground has obtained its greatest weight. I am opposed to waiting for the stalks to dry and harden.

I have no correct information as to the quantity of buckwheat which can be produced on good land per acre, in this part of the country. Without great pains, at least one third will be lost by shattering.

The 3d query I cannot answer.

Answer to 4th query. I presume there can be no doubt that a crop of buckwheat would be of very great advantage to the land, if the oat stubble was ploughed in without delay, and the buckwheat immediately sown. There would be a luxuriant mass of vegetable matter to be ploughed in, the last of September, if the season should be at all favorable; and I should not be surprised if the increase to the acre produced thereby, would be from three to five bushels of wheat the first crop.

I have tried the plan of ploughing in the oat stubble, immediately after the oats were cut, for the purpose of having a green crop from the scattered seed, to plough under in October. Notwithstanding the land had been well manured for the oat crop, the succeeding crop of wheat too evidently showed the *exhausting* effects of the oats, notwithstanding the green crop of oats.

It is to be hoped the above remarks and opinions will assist in eliciting from some able hand, a full answer to the queries. S.

Windsor, Prince George co.
28th January, 1834.

ON IMPROVEMENT OF LANDS IN THE CENTRAL REGION OF VIRGINIA.

To the Editor of the Farmers' Register.

Sir,—It is highly gratifying to your particular friends, to find that your periodical has produced such an impression through the country. It must be truly gratifying to every patriot, and especially to every Virginia patriot, to find the whole community so generally aroused on the subject of improving the soil, and so generally believing that something greatly valuable will soon be effected.

But, sir, we may fold our arms in the indulgence of these joys and hopes, and all that you can publish will be as an idle dream, unless your readers will resolve, each for himself, that practical benefits shall result to him, from the instructions contained in the Register. I am old enough to remember that when the great agricultural patriarch of Virginia first published his Arator, his opinions were in the mouths of every body; and I was then *young* enough to believe confidently, that all Virginia would soon be a perfect garden. But what has followed? A few, possessing soils primitively rich, have derived great advantages from pursuing Col. Taylor's system: fewer still have ingeniously adapted the system to poorer soils; a much smaller number, residing on lands called, in the Essay on Calcareous Manures, "poor acid acid soils" have, by strictly adhering to the "four shift system," been able barely to keep their noses out of water; while much the largest number, even of those who made the loudest noise about Col. Taylor's writings, have not obeyed a single precept contained in them. Many a pert school boy, is willing to sink to the dogs, if he can only make the impression that he is a lad of genius, and might be a clever fellow, if he would. I know some such, and anxiously wish they would take the hint. In agriculture, the older school boys, I fear, are in a more hopeless condition—for they pretty generally have been formed out of the young ones, and have the habit of indulgence almost petrified into a natural propensity.

Prosperity in any business must be preceded by a knowledge of the obstacles to improvement and success—by the arrangement of a regular plan of operations, and by a fixed determination to remove those obstacles, and to pursue rigidly such a plan, regardless of the difficulties which may interpose.

The obstacles to improvements in central Virginia, (for which portion of our state these remarks are chiefly intended,) are 1st. The impoverishment and exhaustion of so large a part of our land, and the scarcity of means for its resuscitation; 2d. The almost total absence of calcareous manures; 3d. The extreme liability of our climate to drought; 4th. The cultivation of tobacco; 5th and last, and very far from being the least, the employment of slave labor.

These heads might furnish matter for a large volume, but the writer, though in the condition of Burns, when doubting whether he should write a song or a sermon, hopes to confine himself to the limits of one or two essays.

1. The poverty of so large a portion of our soil, might operate much to discourage in attempts at improvement, did we not know that it had once been fertile; and the adage, that *what has been, may be again*, is so entirely admitted by most

of us, in this matter, that we should be inexcusable were we to make no attempt to restore our country to its original fertility. It was said by our great Henry, on some occasion, soon after the revolutionary war, "since the achievement of our independence, he is the greatest patriot, who *stops the most gullies.*" The powerful mind of this wonderful man, with almost the spirit of prophecy, could forebode the present impoverished condition of our soil, from the then existing modes of cultivation; and probably adopted this striking form of expression, as best calculated to awaken the attention of others. The inventive spirit of the age has provided a plan for the arrest of gullies, which have, in some sections, made such ruinous inroads on our lands. Horizontal ploughing and hillside ditching will, if skilfully executed, effectually put a stop to their increase. And time, which destroys all things, will destroy the gullies, when their causes are removed. But when the effects of washing rains are obviated, the means of filling gullies, either by throwing in rubbish, forming barriers across them, or causing grass or trees to grow in them, are not of difficult application.

The same kind of ploughing and ditching which so admirably provides against the formation and increase of gullies, constitutes one of the best means of resuscitating the exhausted soil. Evaporation has been pronounced "the great thief of manure." However readily we admit the insidious purloinings of this culprit, we are inclined to think, they bear but a small comparison with the ravages committed by heavy falls of water, which like a tyrannic destroyer, frequently sweep nearly all the soil at once. Even when from tenacity of the soil, or some other cause, it is not swept away, its fertility is greatly diminished, by the running off of a great portion of those soluble matters, which constitute, perhaps, the best manures. Skilful ploughing and ditching, by giving the water a more gradual discharge, allow time and opportunity for the disposition of much of these soluble matters, and their retention by the land. Whoever has much observed land horizontally ploughed, must have remarked the quantity of trash and colored foam which settles in the water furrows. All this, and even much of the solid soil itself, if the lands are not skilfully ploughed and ditched, must be washed away by great rains, which we consider the greatest spoilers of the soil, not even excepting the ravages committed by the teeth and hoofs of grazing animals.

When the evils of washing rains are well guarded against, the lands rigidly kept enclosed, (i e. secured from being grazed,) and a judicious course of crops observed, we hold that the foundation is laid for the renovation of the soil. Time, the great destroyer, is also the great restorer; and will inevitably—if man diligently puts matters in a proper train—bring back the land to its primeval strength. The term required for the accomplishment of this desirable end, must depend on the original constitution of the soil, the degree to which it may have been exhausted, and the rotation of crops observed. Under even the most auspicious circumstances, it might not accord with the interest or the inclination of the good farmer, to await the tedious operation of natural causes, in the restoration of fertility to his land. He will, of course, inquire for some means whereby he may hurry the operation.

We complain much of the scarcity of the means of improving our lands. It may well be doubted whether such complaints are reasonable, while we so constantly fail to avail ourselves of such means as do exist. It is often said hereabout, "the people in Eastern Virginia may well talk of improving land, when they have such rich beds of marl, with which they can easily quadruple the value of their lands; if we had such an advantage, we would directly go to improving too." When beholding the blessings enjoyed by others, we are prone to overlook those beneficently lavished on ourselves. Though we may be denied the use of marl, yet we have a soil better calculated to retain putrescent manures, than most of that in Eastern Virginia. Who among us has yet exhausted the means supplied by nature for the improvement of our lands? It is true, some of us—rather carelessly though—use the offal of our corn and wheat crops to that end. We all know that oak leaves, and we are told in the "Register," that pine leaves, make good manure, when fermented in the farm pen or stable yard. Yet few of us gather many of them for such purpose, and many of us call it "robbing Peter to pay Paul:" yet Peter loses but little by it, more than the winds and the rain would carry away from him; and after all, it is but forcing him through Paul to pay his own taxes. All of us call ashes one of the best manures. Yet who has an ash house? The writer knows but one in the county in which he resides. Who does not know that the excrement of sheep and hogs makes excellent manure? Yet how many pen these animals with a view of obtaining it? How many among us have made a fair experiment of the adaptation of gypsum, as a manure, to their lands? We have long known, that clover, as a meliorating crop, possessed great fertilizing powers. How few of us have been benefitted by this knowledge on an adequate scale? How many sow oats, buckwheat, or any other article, with a view of turning them in, for the benefit of the land? A single example of this was afforded in the seventh number of your Register. Who has hauled clay upon sandy land, or sand upon clay, with a view to improvement? In short, sir, I have just discovered that I have given the wrong heading to this branch of my subject. Instead of complaining of the scarcity of the means of improving land, I should have set down as the chief obstacle in effecting a matter so desirable, the ignorance, apathy, and procrastination of our people on this subject. Yes, sir, and prejudice too—for there is prejudice, and that sometimes among men of no inconsiderable standing. But the great mass of people in my vicinity are thoroughly convinced, that whether it be practicable or not to improve our lands, the old system of cultivation must end in ruin to our farms. And that end, with many of us, is already in sight. To "*give up the ship*" is what we cannot bear to think of; and we look, sir, to the Register, in a great measure, to guide and to stimulate us to a more correct course of management. It is pleasing to observe that not those alone specially engaged in agriculture, but that professional men, merchants, and mechanics, are taking a strong and patriotic interest in this matter.

2. The little belt of country, mentioned by a writer in your first number, containing some beds of weak argillaceous marl, forms but a speck, in comparison with the extent of country denied the

benefit of calcareous manures. And though it is hoped that new sources of these mannres may be discovered, yet until this is done, we should direct our efforts according to the means enjoyed. It is usually needless to talk much about irremediable privations. Our wants in this respect are only mentioned from a desire to excite inquiry regarding their relief. Admitting the correctness of the theory, that the failure of gypsum to act on some soils, is produced by an acid in the earth, which, by combining with the lime in the gypsum, decomposes it, may we not look to ashes, as, in some measure, a remedy against this evil? A few bushels of ashes sown on an acre of such land, might furnish employment for the acid, for a sufficient length of time to allow the plaster to act upon young clover, so as to secure its life and vigor. Even if the ashes should fail to answer this purpose, their own direct benefit upon the crop would doubtless be fully equivalent to the trouble and expense of the operation. The scarcity of ashes would form the only limit to the benefits derivable from this source. Of this, however, we have no right to complain, until we have made every exertion to procure and apply all of the article which may be attainable.

The theory af acidity in the earth, and its effects as developed, in the "Essay on Calcareous Manures," is certainly new, and I believe generally admitted by such agriculturists, in this section at least, as have any acquaintance with chemistry. Its discovery and admission will, however, be unavailing, unless it be duly admitted to the rank of a practical guide. In countries abounding with calcareous manures, the remedy against acidity is always at hand. But where this advantage is denied, it may be proper to inquire, whether the enemy may not be combatted in some indirect manner. Our best soils are sometimes prone to produce acid vegetation, when kept a long time ungrazed and uncultivated. I infer from this, that two things very dissimilar in themselves, may produce the same results. Col. Taylor, in his Arator, very distinctly remarked, the fertilizing effects of both grazing and aration, when judiciously conducted, and the impropriety of mixing the two systems together. If the symptoms of acidity follow abstinence from both systems, it would appear to leave us the inference, that a strict adherence to a standing pasture, and a well regulated rotation of crops, stand among the safeguards against the evil. That a piece of ground long kept in pasture, becomes exempt from those kinds of growth indicating acidity, is manifest to all who have taken the trouble to observe. And I believe it equally certain, that lands frequently stirred with the plough and hoe, enjoy the same exemption. Whether this arises from the mere intermixture of the particles of earth, or from the exposure of the same, to the influence of the sun and atmosphere, is not determined; but I judge, that the sun has the chief agency in this matter.

Much of this acidity appears to be produced by the decomposition of foul weeds, which are permitted to grow on the land. If this be correct, it might be proper, not only to pay more attention than we usually do, to the extirpation of these nuisances, but to bestow on the land good manure, to the greatest possible extent. And we do not thus merely nullify the evil, but the acid, which when alone, operates as a corroding canker on the crops, will, after combining with certain materials in the manure, form salts, affording to them the most nutritive aliment. We seldom find sorrel growing on a properly manured tobacco lot. When you apply calcareous manures on your lands, you both neutralize the corrosive power of the acid, and treasure up a store of salts for the nourishment of plants: and you do this directly. We, perhaps, do nearly the same thing, by the application of manure—but in a manner less direct, and with effects less permanent. In whatever state you apply manures on soils rendered calcareous, the lime is ready to form its combinations; but on acid soils, it may be necessary to be particular as to the condition of the manure, as it is said that both fermenting and overheated manure abound in acid. You probably possess this further advantage over us, that you have constantly in your soil, after marling, a material fully charged with, and possessing so strong an affinity for, carbonic acid—one of the principal aliments of plants—that however rapidly it may be abstracted by their roots, a replenishment, from the atmosphere, will speedily occur. In all cases, whether the soil be calcareous or not, it is probable that acidity is wisely provided by nature, and that the business of man is, to prevent its evils and secure its benefits.

Another mode of contending with acidity may be sought in the application of what may be termed telluric manures. These may be applied not simply with the view of changing the consistency of the soil, by mere mechanical admixture, as when sand is applied to clay, but with the hope of affording to the soil an increased capacity of combining with manures. As the number of ingredients is increased, the chances must increase for chemical combination. The advantages frequently derived from removing earth from one spot and placing it on another—from spreading the clay and other matters from cellars and pits, on the surface of land, must be familiar to all. In an extract from the writings of Professor Eaton, in the fourth number of the Farmers' Register, a variety of rocks are mentioned, which when pulverized, give fertility to the soil. Some of these are very abundant in many parts of our middle country, and most of them have some lime in their composition. This is almost a new subject in agriculture, and offers rewards abundantly sufficient to encourage experiment.

If these views have any foundation in truth, the tendency of our lands to produce acid may be turned to advantage, if they are properly managed, notwithstanding the great detriment it seems to cause, while they are neglected and abused. The luxuriance of their crops, when highly manured, is truly remarkable. No part of the world produces finer crops of wheat, for example, than the richest lots in our middle country.

3. The great liability of our climate to drought, is a matter which we cannot avoid; yet, we may in some measure guard against its evils. One of the best modes of doing this is, to direct our attention to a great variety of crops, some of which may be less affected by drought than others, and some, by taking the whole season for their growth, avail themselves of such parts of it as are not dry. The different kinds of root crops, for the most part, possess this property. Their value, as food for stock, is little known in this district: for except,

in a small way with turnips, the experiment has very seldom been tried. Our soil and climate, however, seem to be well adapted to their growth.

The artificial grasses are also well calculated to supply any deficiency in the corn crop. These, however, have met with but few friends, if we judge from the attention paid to them. I know a gentleman, who has been in the habit of having his working horses held to a volunteer crop of gama grass, growing on a piece of very sandy low ground. It is reported to have answered, in this way, well. This should be encouraging to such as propose bringing this article under cultivation.

Rye and oat crops, both of which are very uncertain as generally managed, may, if sown in good time, on ground properly prepared, be considered pretty sure crops. Rye, to succeed in this part of the country, must be sown about the last of August or early in September. Oats rarely succeed when sown as late as April and May. But sown, on ground sufficiently dry, in January, February, or very early in March, they seldom fail.

Irrigation has been so little practised in Middle Virginia, that we are almost left to conjecture as to the amount of benefit to be expected from it. No one doubts its efficacy on grass lands. I have known it very successfully tried on both corn and tobacco. We would all, perhaps, be surprised to find—which we might very readily do by a little attention to levelling—how much land may be brought under the influence of this art. We would also be, perhaps, surprized to find how much our crops would be increased, by having only a small portion of land irrigated. It is said that in Italy, those who are unable otherwise to water their lands, willingly give half their crops for water, from the public canal, made for the purpose of irrigation.

4. Little need be said of the tobacco crop as affording obstacles to agricultural improvement. It has long been charged with being the chief cause of our difficulties; and as usually cultivated, it has long merited the accusation. It may, however, well be questioned, whether the charge be not more applicable to the management, than to the crop. We suffer it to become the great monopolist both of our manures and our attention, and then scold, because grounds cultivated in other articles, become poor. It certainly is not, in itself, a great exhauster; but occupying all the land that the planter can annually manure, and all that he clears, taking the very gleanings from the other fields of the farm, it leaves them in the condition of those portions of a country unprotected by the government. If the fertility of its lots were preserved, by ploughing under oats, clover, or some other meliorating crop, after the manner of Mr. Old and others, then all the manure might be distributed over the farm, and very different effects would follow. Such a removal of "*deposites*" as this would doubtless prove salutary.

With the prices obtained for our tobacco during the last fifteen years, we must go back to the good old fashion of wearing homespun—banish foreign luxuries from our tables, and raise our own meat; or, we must improve our avenues to market, so that other crops may bear transportation: or, lastly, we must build up towns and villages, and erect manufactories, and thus bring the consumers to the crops.

Action and reaction are as perfectly equal in commerce as in physics—and restriction on the foreign articles given in exchange for our tobacco, limit its foreign use, and recoil upon the producer in the reduction of its price, as certainly as if a duty were imposed on its exportation. The time was when it was rarely we heard of a mortgage on land, and some disgrace was attached to the mortgager. Now, in some neighborhoods, half the land is in this condition. In some neighborborhoods also, a man can hardly be found, who is not waiting for something approaching to a fair price for his land, that he may sell and remove to the "far west." Is there no help for these things? So far as the people are concerned, it can only be remedied by practising the most rigid economy. But changing national habits by common concert is too difficult to be expected. Our legislature might levy such a tax upon merchants, as would give us all the sweets of "domestic industry," brought home to every man's business and bosom. This glorious system of "American industry," thus pushed to its last extreme, might afford every body an opportunity of judging its merits, if it did not satisfy its greediest advocates. Fight the devil with fire.

Improving our avenues to market, is also, in part, a subject for the consideration of our legislature. With the best possible facilities for transportation, the single county of Charlotte might, probably, under a good system of agriculture, produce from one to two or three hundred times its present amount of wheat for market. Whenever transportation becomes cheap, we will not be confined, as at present, to a single marketable crop, and the surplus carriage which is now paid, even of that crop, will be added to the planters' profits.

Virginia has long labored under very peculiar disadvantages. Nineteen twentieths of the labor being agricultural, we have few consumers at home for our surplus products, and our means of transportation being miserable, a great part of the state has been able to raise little besides tobacco for market. A new era seems to be commencing—whether for good or for ill, time must determine. The simple grandeur of the Ancient Dominion has departed, perhaps, forever—and cannot long be enjoyed by any country. With very little trade—but that free and simple, and with a hard-money currency, the days of the wooden trencher and pewter plates and dishes, were glorious days—when every man understood and minded his own business. Now, many a planter furnishes a carriage for his wife and daughters to ride in, costing more than the legacy he could bequeath to each of his children. Towns, villages, and manufactories are beginning to be erected—internal improvements are much *talked of*—and every man is a politician. If things progress as they have done, for a year or two past, we shall soon have consumers enough in the bosom of the state, for our surplus commodities; and much more abundant encouragement, than heretofore, will be afforded to improvement in agriculture. I fear, however, this will not be accompanied by an improvement in morals. Extremes sometimes work the cure of their own evils. The "restrictive system," which, like a north easterly blast, has so long benumbed our energies, may force its handicrafts upon us, and bring to us some good with its evils. Whether we have not already weathered the worst of the storm—let

politicians determine. Within the last three or four years, I learn, that several thousand laborers have engaged in manufactories of one sort or other.

5. Having utterly wearied myself with the length of this article, I beg pardon of the reader—if there be any—who shall have waded thus far into it. Being astounded by the magnitude, and lost in the intricacies of the remaining part of the subject, we shall say but little on it. Admitting that slave labor is less profitable than free labor might be, what shall we do with the negroes? For an answer to this question, shall we go to those for advice, who are perfectly ignorant of the subject? Shall we sell the slaves to traders? Many of us have purchased them at exorbitant prices, purely to save them from the clutches of these gentry. Shall we turn them loose among ourselves? This would be ruin to them, to us, and our children, and treason to our country. Shall we send them to Africa? Where are the means? Professor Dew has most ably demonstrated this to be impossible, and I am glad that Mr. Duff Green has stereotyped the essay, and sells it at only six dollars per hundred. Our merchants should scatter it through the land. In this age of crusading benevolence, there are some, whose charity, instead of beginning at home, never was there—it is ever wandering to distant regions enchanted by the vast scope of its own excursions. Whatever be the designs of these people, their conduct tends more to intermeddle with, and diminish the comforts of their beneficiaries, than to remove their burthens. But glorying in their desire to do good, they care not for consequences, or the means used.

The mutual ties between master and slave are much weakened, and we shall be compelled to draw the reins of discipline much tighter than heretofore. But it should be done in mercy and in kindness. Every good farmer should, at least once a day, see each one of the brute animals on his farm. How much more are we bound, constantly to attend to the comfort of our slaves! We should preserve a daily intercourse of dignified firmness, and humanity with them—watch over their moral and religious instruction, and keep no more than we can faithfully superintend. This seems to be the only way open, to diminish the evils of our condition. In the developements of futurity something better may be indicated.

M. N.

CHEMICAL ANALYSIS OF SHELLS.

To the Editor of the Farmers' Register.

William and Mary, January 27, 1834.

My Dear Sir,—The inquiry contained in your last letter, has induced me to make a number of analyses of recent, as well as fossil shells. In these experiments, besides determining the quantity of *animal matter* present, to which your inquiry peculiarly referred, I have also aimed at an exact estimation of the other substances existing in the various shells, submitted to analysis. This, though not a difficult, is a tedious and laborious species of research, and could not be carried out to the extent of a full investigation, without the devotion of much time to patient and reiterated experiment.

I therefore have the subject still on hand, as occasion enables me to pursue it; and shall from time to time, transmit such processes and results, as you may deem interesting to the readers of the Register. At present, I propose merely to give you a sketch of some analyses of the recent oyster shell which I have lately completed; and which, if I may be allowed to conclude, from the great care bestowed upon every stage of the examination, are entitled to be looked upon as accurate.

Mr. Hatchett, a distinguished English chemist, was the first who undertook a systematic investigation of the chemical composition of bones, shells, and other analogous substances. His numerous analyses, established the general result that shell and bone, in their various modifications, constitute two distinct genera—both of them containing animal matter—indurated in the one case, by carbonate, and in the other by phosphate of lime. The shells of many marine animals, and several Zoophytes, he found to occupy an intermediate rank, containing animal matter, with variable proportions of *both* the calcareous salts. The observations of this eminent experimenter, appear in the main to be correct—but in some of his details, especially in regard to the oyster shell, he seems to have fallen into error. Murray in his analysis of Hatchett's labors, speaking of the animal matter contained in shells—remarks that "this substance often constitutes a *large* part of the shell, as in that of the oyster or muscle"—a statement which has since been disproved by the analysis of Bucholtz and Brandes, in Germany, as reported in the late work of Berzelius, and with which the results about to be detailed, are entirely inconsistent. As you have yourself remarked, this is a question of some interest in the agricultural application of the shell, since the form in which it may be most usefully employed as a manure, will depend upon the quantity of animal matter which it contains. You will perceive by the following analysis, that the proportion of this ingredient, is so minute, as to render it unworthy of estimation, in comparing the different modes in which the shell may be applied.

The shells submitted to analysis, were of middle size, had been some weeks opened, and were perfectly dry, and as clean as they could be made by washing in cold water with much friction. There was, therefore, a small portion of the dark colored substance usually attached to shells, adhering to their outer surface, and this was intentionally permitted to remain. It did not, however, form one half per cent. of the entire mass.

The shells were first pulverized in a Wedgewood mortar, and to obtain a fine powder, the pulverized mass was thrown upon a very fine sieve and the larger grains returned for the renewed action of the pestle. The temperature of the room was about 60°, and the dryness of the atmosphere, pretty uniform throughout the analysis.

1. Two specimens of the powdered oyster shell, each weighing 200 grains at the temperature 60°, were enclosed separately, in small glass matrasses of known weight with long necks. The matrasses were placed on a sand bath, and exposed some time to a temperature of 200°, this having been found by previous trial, to be about the highest temperature which the substance would bear without a change of color indicative of incipient decomposition. A considerable dew collected in the neck of each vessel, and by continuing the heat this accumulated moisture was entirely expelled. Without removing the contents, the flasks were accurately weighed. The difference of weight of each flask and its contents before and after the

exposure to heat was thus determined. This difference, obviously due to the moisture which had escaped, was in one instance 3 grains, in the other 3.2 grains, giving an average of 3.1 grains of water in 200 grains of powdered shell—or 1.55 grains per 100. Almost precisely the same results were obtained in another experiment made afterwards.

2. Four hundred grains of the powdered shell, were digested in pure hydro-choloric acid, until all the soluble matter was taken up. Two filters were then prepared of Papier Joseph, of exactly equal weight when dried in the sand bath. Through one of these the liquid was carefully passed: the filter repeatedly washed with distilled water and then dried. Both filters were now exposed on the sand bath for a few minutes to bring them both to the same state of dryness; and then they were placed in opposite scales. The excess of weight arising from the matter left by the solution on the filter through which it had passed, was 3.4 grains; of this obviously only a part was animal matter, and it became a matter of delicate experiment to determine how much. In order to do this, as the substance was too small in quantity to remove from the filter,

3. The filters were successively burnt in a platinum crucible, until nothing but a white ash remained. The residue weighed as follows:

That of the filter, containing the deposite	2.2 grs.
That of the filter alone,	0.6 grs.

The former residue, viz: 2.2 grains, obviously consisted in part of the proper ashes of the filter itself. This, amounting to 0.6 grain being subtracted, leaves 1.6 grain of incombustible matter left on the filter by the solution. But the entire quantity of matter deposited on the filter, was 3.4 grain; deducting from this 1.6 grain, we have 1.8 grains of combustible or animal matter, which disappeared in the combustion of the filter. The incombustible matter was found to be silex. The four hundred grains of shell, therefore contained

Of Silex,	1.6 gr.
Of insoluble animal matter,	1.8 gr.

4. The solution obtained [in 2,] was now examined for the phosphate of lime, of which it was suspected to contain a small quantity. Pure caustic ammonia was added in excess; the liquid became cloudy, and after some time a flocculent precipitate subsided. The solution was then passed through a filter previously dried at the normal temperature of 200° and accurately weighed. Of course the precipitate was retained upon the filter. The filter well washed in distilled water, to remove any portions of adhering solution, was then dried and brought to 200°. It now weighed 7.5 grains more than at first. This excess obviously gives the weight of the precipitate thrown down by the ammonia. As the precipitate thus produced, might have been alumina, as well as the phosphate of lime—although the presence of the former was not considered probable, an examination of the precipitate became necessary. It proved to be insoluble in sulphuric acid, which showed that it was not alumina, and before the blowpipe, it had all the characters of phosphate of lime. This operation, therefore, gives in four hundred grains of the powdered shell, 7.5 grains of phosphate of lime.

After the removal of the phosphate of lime from the solution, a portion of the latter was tested for magnesia—but no indication of its presence could be obtained. The solution evidently contained no other earth but lime.

As a small portion of animal matter, might probably be taken up by the acid, and thus the quantity as obtained by the above process [3,] fall short of the amount really present—another mode of examination was adopted for the purpose of comparison, of which the following are the details. In these experiments, the principal object being the estimation of the animal matter of the shell, the other ingredients are not particularly referred to.

5. Four hundred grains of the powdered shell were dried at the temperature of 200°—and lost by the operation 6.5 grains. The mass was then exposed in a platinum crucible, to a dull red heat over a spirit lamp. It became of a light brown color and lost several grains weight. It was now exposed to a very bright heat in a furnace for half an hour. On cooling, it weighed 379 grains. Its color was pure white. It was somewhat caustic and had obviously lost a good deal of carbonic acid as well as all its animal matter. To restore the former, the mass was heated in a porcelain capsule, with a concentrated solution of carbonate of ammonia, and the heat was continued at about 200°, until the mass became dry and the odor of ammonia ceased to be exhaled. It now weighed 389.7 grains.

The same operation repeated upon another four hundred grains of the powder gave, after exposure for some time to an intense white heat, only 272 grains—so that the mass was almost pure caustic lime. Treated with carb: ammonia to restore the carbonic acid, its weight was 390 grains. The average of these two results is 389.85 grains for the earthy or saline matter contained in 400 grains of the powdered shell.

Two parallel experiments were now performed, each with 500 grains of the powdered shell—exposed to a white heat in a Hessian crucible. Treated as before with carb: ammonia—they gave 487 and 486.6 grains respectively. These numbers give an average of 486.8 grains of earthy or saline matter contained in 500 grains of the powdered shell, which corresponds to 389.44 for 400 grains. This latter number differs from the results with the platinum crucible by $\frac{4}{10}$ of a grain, a difference which is readily explained by the adhesion of a small portion of the powder to the interior of the Hessian crucible, a circumstance which cannot be avoided. It will therefore be more correct in this case instead of taking the average by both crucibles, to rely upon the first results with that of Platinum.

Subtracting 389.85 grains from 400—we have 10.15 for the moisture and animal matter contained in 400 grains. The moisture has already [5,] been determined to be 6.5 grains. The remaining 3.65 grains, would therefore appear to be animal matter. By the direct process however, we found the animal matter to amount only to 1.8 grains. It is to be observed, that a part of the difference between these two numbers, viz. 3.65 and 1.8, must be ascribed to the unavoidable loss in transferring the calcined powder from the crucible to the capsule in treating it with carb: ammonia—and again, in the operation of weighing. The remainder of the difference may probably arise from the disappearance of a small portion of animal matter by solution, in the acid. We may therefore put down for soluble animal matter and loss 1.85 grains.

The quantity of carbonate of lime, not having

been ascertained by any separate process, is to be calculated from the proportions of silex and phosphate of lime already determined.

6. The mass remaining after the treatment with carb: ammonia, consisted as is evident from preceding experiments—of carbonate of lime, phosphate of lime and silex. The total weight of the mass was found to be 389.85 grains. Deducting from this the sum of 7.5 and 1.8 grains, the quantities of phosphate and silex, we have 380.75 grains for the quantity of carb. of lime present, in 400 grains of oyster shell.

The results when summed up, are as follows:—

Carbonate of Lime,	380.75
Phosphate of Lime,	7.50
Silex (probably accidental,)	1.60
Water,	6.50
Insoluble animal matter,	1.80
Loss and soluble animal matter,	1.85
	400.00

One hundred grains of oyster shell, will therefore give

Carbonate of Lime,	95.18
Phosphate of Lime,	1.88
Silex,	0.40
Water,	1.62
Insoluble animal matter,	0.45
Loss, &c.	0.46

From this view of the composition of recent oyster shell, it is obvious that no appreciable advantage can be expected in applying it as a manure from the minute proportion of animal matter which it has been shown to contain. It is as a carbonate of lime, and that nearly in a state of purity, that it should claim the attention of the agriculturist.

The scallop shells (Pecten Jeffersonius and Pecten Madisonius,) of our marl beds, of which I have recently analyzed several specimens, yield a larger proportion of animal matter than the recent oyster shell, and indeed in many instances these shells would seem to have sustained no loss of this or in fact of any of their original constituents.

The Madrepore, or as it is sometimes called Coral, imbedded among our marl, contains a very minute proportion of animal matter, and nearly the same per centage of phosphate of lime, as the oyster shell.

Further observations on these subjects I will reserve for a future communication. In the meantime, I hope you will not feel yourself bound to inflict the whole of this long communication upon your readers. It has been drawn up principally with the view of publication, in a periodical more strictly scientific than the Register, and all the details of the analysis were deemed necessary in order to give proper authority to the results.

Very respectfully, your friend,

WM. B. ROGERS.

P. S. I think you will be interested to learn that in an examination of the berries of the Sumach (Rhus Glabra,) with which I have been for some time occupied, I have discovered a vegetable acid of properties so peculiar, as I think, will entitle it to be regarded as new. It exists in the juice in large quantities combined with lime, forming a compound of great beauty when purified and crystalized, and of a very agreeable acid flavor.

[The scallop shells (in which Professor Rogers has found an amount of animal matter which we certainly had not supposed to remain in any which have been for so many ages lying buried in the earth,) and those of one species of oyster, are both of a gray color; and are so hard, and undergo so little change from exposure, that they are of very little value as manure. The white fossil shells are far more abundant—and in comparison to the former, soon come to pieces in the soils to which they are applied.]

PUBLIC WORKS PROPOSED FOR NORTH CAROLINA.

Extract from the late Report of the Board of Public Works of that State.

Of the comparative propriety of attempting to re-open Roanoke inlet, the Board do not deem it necessary to express an opinion. Such a work is entirely national in its character, and has been withdrawn from their jurisdiction and referred to the Congress of the United States by the resolutions adopted three years since by the General Assembly. They propose to direct the attention of the Legislature to an improvement designed to effect the same object, which was first suggested by Mr. Gallatin in 1807, and which seems to have been a favorite project with that great statesman. A survey was made under his direction of a part of the route, anterior to the publication of his celebrated report on inland navigation, but no copy of the plot is in the possession of the Board. The remainder of the route was surveyed, and the practicability of the work ascertained by Messrs. Price & Clemmons, in 1818. A survey of the same section was made under the direction of Mr. Fulton, in 1822, who concurred in the opinions expressed by Messrs Price & Clemmons.

The Board submit to the Legislature the propriety of connecting Beaufort harbor with the waters of Neuse river, by a ship channel, and then extending this channel by a cut as direct as may be, to Roanoke river at or near Plymouth; and by a cut from the north side of Albemarle sound at Edenton, to the point where the feeder enters the Dismal Swamp Canal, so as to open a direct communication for vessels drawing eight feet water from Norfolk to Beaufort.

For a minute description of the country through which this canal would pass, the particular character of the soil to be excavated, and of the streams by which the water is to be supplied, the Board beg leave to refer to the Reports of Mr. Gallatin, Messrs. Price and Clemmons and Mr. Fulton. All these reports concur in representing the work as practicable; and Mr. Gallatin evidently regards it as presenting much less difficulty, in proportion to the distance, than either the Delaware and Raritan or Delaware and Chesapeake Canals; the former of which is nearly and the latter entirely completed by the respective States in which they are situated. In the course of next Spring it is stated that the Delaware and Raritan Canal will be finished, and a direct inland navigation consequently be opened from Stonington, Connecticut, to Elizabeth City, in North Carolina. If the enterprise now recommended shall be accomplished in a reasonable time, Mr. Gallatin may yet live to see the magnificent scheme, which he regarded as essential to the defence and commercial prospe-

rity of the country realized—an inland navigation from Maine to Georgia. If a canal fifty feet in width and eight feet water shall be excavated, so as to afford a direct communication between Beaufort and Norfolk, what will be the effect upon the condition of North Carolina and of the Union? All the produce from the shores of Albemarle sound, from the valleys of the Chowan, Cashie, Roanoke, Tar and Neuse rivers, estimated to be the value of five millions of dollars annually, would find its way into it. That which was intended for the south would reach the sea at Old Topsail inlet, or stop at Newbern or Beaufort. The latter is known to be the best harbor and seaport on our coast; and from its proximity to the Southern and West India market, must at once become an important commercial town. The produce on the other hand, intended for the north, would either go up the Chesapeake and inland to Philadelphia, or out to sea at the Capes of Virginia, or seek a market at Norfolk, now the finest seaport, and which, supported by such a trade, would soon become one of the largest cities in the Union. By this channel of communication our coasting vessels and all others drawing eight feet water, would be relieved from the hazardous and difficult navigation around Cape Hatteras and Cape Lookout, the most dangerous points known to our navigators, and where it is believed more vessels have been wrecked than on the whole coast of the United States besides.

Nor would the advantages of its navigation be confined to the coasting trade. A farmer descending any one of the rivers connected with this channel might continue on in his own boat either to Beaufort or Norfolk, dispose of his produce without the intervention of a commission merchant, purchase his own supplies, and return with equal ease in the way he came.

An improvement of this character would contribute much to make us one people. Wilmington, Beaufort, Newbern, Washington, Plymouth, Edenton, Hertford, and Elizabeth City would be drawn nearer together. The produce of the West would be brought down by rail roads and improved river navigation, and find its way to the ocean or be concentrated at Beaufort and Norfolk.

In addition to the facilities this canal would open to commerce, it would have the effect of reclaiming a large body of swamp lands, which would be soon brought into cultivation and rendered productive. That which is now a howling wilderness, the abode of wild beasts and venomous reptiles, would become a fertile and highly cultivated country, and this great highway of trade exhibit upon its borders a succession of fruitful fields and flourishing villages, the reward of our enterprise and liberality.

These are some of the advantages likely to result to our own state. Let us now consider in what manner the interest of the Union would be effected by the accomplishment of such a work. An inland navigation would be opened from Connecticut to Georgia, with the exception of a short run, through a safe sea from Beaufort to Charleston. If the channel be completed and the tolls made light, the whole coasting trade of the United States will pass through it, to avoid the dangerous navigation around Cape Hatteras. And if the banks of the canal be constructed to admit of steam navigation at the rate of ten or twelve miles an hour, all the travelling from north to south and south to north, for nine months of the year, will be by this route.

The general government has been at great expense in constructing a navy yard at Norfolk supposed to be superior to any in the Union—the port of Norfolk offering, perhaps, the best possible situation for such a work. It is of great importance that this yard should be well supplied, and upon reasonable terms. This canal would open to Norfolk a country abounding in almost inexhaustible forests of the finest pine and oak timber and furnishing adequate supplies of naval stores. The live oak timber of the south might be transported by this route immediately to the yard, with the greatest economy and despatch. These are some of the advantages in times of peace; in war, this inland communication would be invaluable, and might be maintained in defiance of the fleets of our enemies. Should the Chesapeake be blockaded by a superior squadron, our fleets and men of war could at any time receive at Beaufort, through these canals, any supplies they might require from the navy yard at Norfolk. Merchantmen might send their cargoes to the interior, and receive return cargoes by the same channel. The existence of such a work would give to North Carolina a distinction and consideration in the Union, of which her sons might well be proud. It would more than obviate the difficulty occasioned by the closing up of Roanoke inlet, since instead of one we would have easy access to two of the best seaports on our coast.

From any point upon the canal, rail roads might be constructed to the interior of the State. The precise location of such roads can be properly determined when the necessary surveys and estimates shall have been made. An able communication upon the subject has been submitted to the Board, by Mr. Sullivan, a civil engineer formerly of Boston, but now a resident of New York. The boldness, originality and apparent practicability of his plan, will arrest the attention of the Legislature. His opinions have been submitted to an engineer, second in reputation to no member of the profession in that State, who has given them the sanction of his hearty concurrence. They will be stated without further prefatory remarks and with little change of his argument or forms of expression.

"The Blue Ridge being within the boundary line of this State, and its limits comprehending the head waters and valleys of the Tennessee, we hold the key of communication with the valley of the Mississippi. To compare distances, suppose a *line* of location for the rail road, which seems to comprehend the most beneficial effects to the State, intercepting transportation by the rivers, as far south as possible, in order to include the whole of the *southern counties* within its influence; and by *branches, all to the north-west of the base line of the system.*

"This passage would be direct between Newbern and New-York. It is well known that the cheapest freighting is by large vessels. As time enters so constantly into mercantile calculations that steam power can be afforded and is principally used on the Hudson, to command regularity and despatch. The step in improvement from steam tow boats to steam coasters, will be easy and natural since the late further discoveries of *coal* both bituminous and anthracite, in Pennsylvania, has

made the use of it sufficiently economical for the steam engine in navigation.

"To show the great probability of this result, or effect of the rail road, we may compare with it the distances and expense by the most employed routes now open. Let us take New York as the place of departure, and the Mississippi, at the confluence of the Ohio, as that to be reached. From New York to Albany is 155 miles; thence to lake Erie 363; to Cleveland 160; through the Ohio canal 307; to Cincinnati 103; to Louisville 150; to the Mississippi 450; together 1938—of which 1105 is free navigation, and 833 is paying toll. From New York to Newbern is, by sea, 460 miles. The following distances and route are assumed to be the most probable location of the rail road.

	460	the sea passage,
Newbern to Fayetteville,	100	
to Rockingham,	50	
to the Yadkin,	10	
to Charlotte,	60	
to the Catawba,	15	
to Broad river,	30	
to the Blue Ridge,	40	
across the Ridge,	10	
to Asheville,	10	
to the State line,	30	
——355		N. C. rail road, & perhaps somewhat more by reason of the curves.
to Knoxville,	60	
to Kingston,	40	
to Nashville,	100	
——200		Tennessee road.
By the Cumberland to the Ohio,	160	
To the Mississippi, at the confluence,	48	
——208		
1223		Of which 670 is free navigation and 553 tolled.

This deducted from 1938, shows a difference of 715 miles in favor of the North Carolina and Tennessee route, over that of Ohio. Besides which, this route reaches the navigable head of the Tennessee in 875 miles from New York, of which two thirds is free. This will be the cheapest route to Alabama. The Tennessee is navigable above the Muscle Shoals 600 miles, and each shore may be considered a rich agricultural and mineral country. The nearest market to this part of Tennessee, will be the cities of North Carolina. The expense of freight by these two routes, may be also compared. It is stated in a recent publication, that it costs to get a ton of merchandize carried from New York to Louisville, by the lake and canals, $2 75 per cwt. (or 55 dollars per ton,) and that it requires 21 days. Freight from New York to Newbern, if in proportion to that across the Atlantic, would be three dollars; but in the ratio of the freight by steam boats on the Hudson, it would be six dollars: and, as carrying on rail roads can be profitably afforded for two cents a ton a mile, this would be to Knoxville $8 30, and to Nashville thirty dollars—making $17 50 to that city; which is, besides, nearer to the great river than Louisville. And as the Cumberland runs over a limestone bed, it might be easily improved for a low water navigation, by locks submerged and out of the way, when the water is deep enough. But the Ohio cannot be. Its shoals are of sand.

"The general considerations which strongly recommend the North Carolina route are, that during five months the northern canals are closed by ice; that of Pennsylvania four months; that of the Potomac three months; and the Ohio is generally frozen for some months. Besides that, it is too low for navigation two months of the summer, almost every year. But North Carolina is in that medium of *climate*, as well as *geographical* relation to the west, that permits of uninterrupted commercial intercourse through the State. Nor is there any thing in the nature of a rivalry to be apprehended from the Virginia Improvements. The Chesapeake and Ohio canal has so great an ascent, as in effect to increase the distance considerably. The rise westward, is 2486 feet, and the descent to Pittsburg 1787 feet—whole lockage 4172 feet. The James river route rises, in 241 miles, 1478 feet, and descends to the Ohio in 222 = 463 miles, 1997 feet.

"Moreover, we know from the Baltimore surveys, that the ground along the great Kanawha is exceedingly difficult, and it is most likely that this work, if ever undertaken, will incline to the north to Covington, and descend the valley of the Greenbrier. West Virginia is entitled to the accommodation; but having the Ohio navigation, is not, like east Tennessee, in *distress* for access to market. Indeed the Baltimore surveys show that the high valleys of Virginia, watered by the branches of the James, must principally furnish the business of the route along that stream, as division to the South Carolina and Georgia line naturally falls in with the system of internal improvement contemplated by North Carolina, whose western frontier includes the head waters of the Tennessee; so that if the State resolves on having this road, the business of the extensive valleys watered by the Holston and the Clinch, would be more likely to descend with the current to Kingston and Knoxville, and export eastward by the rail road, than to ascend and go north to the James river route, considerably circuitous.

"If we also consider the elevation:—from Newbern to the foot of the Blue Ridge, is stated to be a rise of 1200 feet; which, if the location of the road be gradual, as I suppose it can be on the *southern location* indicated, is only four feet in a mile.

"Since, then, there is nothing to fear from Virginia as a rival, so, on the other hand, there is nothing to apprehend from South Carolina. For, not including in her boundaries the head waters of the Tennessee, she has, after improving her rivers, already turned her enterprise to the increase of commerce at her capital; and it is more likely that the rail roads will ramify among the fertile counties of Georgia, than that, at her expense, one, at great cost, will be made over the mountains to aggrandize Charleston.

"The domestic trade of North Carolina will indeed, (like the interior of Georgia, of New York and of Pennsylvania,) be alone a sufficient object for this main line of rail road, as the base of a system of branches up every valley to north-west

from it and into every productive district between the rivers; but it is a great encouragement and warrant for the work, that a little west of the line of the State, lies this very valuable part of east Tennessee—rich in iron, coal, salt and gypsum, articles in the greatest demand, and the latter wanting to give fertility to the alluvial lands of the eastern counties, as Pennsylvania receives her supply of it from the State of New York. The pine bearing lands of New Hampshire were in this way made fertile, receiving *plaster* by her canals.

"Our agriculturists cannot now afford to sell cotton, at Charleston, at as low prices as the planters of South Carolina can. There is wanting to both, the cheapness of conveyance incident to rail road and proximity of port, to balance the advantages of the fertile West; and it is fortunate that geographical relations will give to North Carolina the ability to open a cheap route to the West, from which the accession of toll from the transit trade may so increase the aggregate of income as to make the home-toll low, and yet enhance the value of the road, as a property, so much, that instead of being an expense, it will be a profit to the State.

"If it gives 12 per cent. nett increase, the State gains a sum equal to its cost and additional to the rise of property consequent on the accommodation. Therefore it is fortunate for North Carolina that the Blue Ridge summit is within her boundaries; because it gives to us, as the most interested party, the command of the communication.

"Rail roads can in no part of our country be made at so little cost per mile as in this state. Most of the materials are on the spot, and labor is cheap; but the manner of building ought not to be slight. A rail road may be rough in appearance, if its stability and accuracy permit of safe speed; and if the top surface under the iron is made hard, to resist the weight of loads, by means of nails driven evenly for the rails to press on, the wood is defended, and about half the iron, as is now commonly used, may be saved.

"It appears, from the fact stated, that North Carolina evidently holds, unrivalled, the best ground of communication with much of the west and all the south west. And it seems clear, that after the place and manner of passing the Blue Ridge is decided on, and an outlet secured to the ocean, the rest is easy.

"The surveys so early begun in North Carolina, have ascertained many essential facts, though they have not extended the entire line here suggested. This plan would not interfere with the proposed rail road from Wilmington to Raleigh; for the crossing of each other, would be, in effect, to give all the interior the choice of both markets, and make the intercourse between the four principal cities, though a little circuitous, short in point of time."

If the road so forcibly recommended by Mr. Sullivan be constructed, or any road, commencing at a point accessible to sea vessels, and terminating at the Tennessee line, the next great object to be accomplished will be the intersection of the State, by rail road communication, from north to south. This should commence at some point on the Roanoke, where it might be connected with the Petersburg and Portsmouth rail roads, and, crossing the navigable rivers of the State above the falls, extend to the South Carolina boundary. It is apparent that the State must be intersected from east to west, and from north to south; because our rivers do not, in their natural state, afford an inland navigation; nor can the obstructions be easily removed by canals, or other works of art. The Roanoke, Tar, Neuse, Cape Fear, Yadkin and Catawba, are, in truth, magnificent rivers. The bare enumeration of them may well excite an honest throb of State pride. Their volume of waters and their fertile and picturesque banks, may move the admiration of any, and must knit the affections of a North Carolinian to his native land. It is, nevertheless, to be confessed, that in their natural state, they have stronger claims to beauty than usefulness. There are very few rivers any where that do not afford better navigation. Not to mention other obstacles, (of which there are too many,) none of our rivers are navigable over, and some of them not up to the great granite formation, dividing the upper from the alluvial country, and extending across the State from north-east to south-west, about 150 miles from, and parallel to the ocean. The Yadkin and Catawba, passing into South Carolina, are both obstructed by the granite ridge—the latter not until after it has entered that State. This ridge intersects the first four rivers nearly at right angles, and makes rapids and falls, which totally obstruct the passage of boats. Thus is our transportation between the upper and low country cut off. Above the falls, most of the rivers are, in their natural state, susceptible, for some distance, of good navigation. If then, the State is intersected by rail roads, in the manner proposed, these roads will be base lines, and receive the produce which may descend the rivers to the falls, or be transported on lateral roads. To illustrate this idea more clearly, suppose the proposed roads completed; a planter who should set out from the Tennessee line, would continue on the road recommended by Mr. Sullivan, to the Cape Fear. He might then stop at Fayetteville, descend the river to Wilmington, pursue the road to Beaufort, or taking the northern route from Fayetteville, proceed to the Roanoke, and thence, by rail road or water communication, reach Petersburg or Norfolk. The latter road would be important, not only as facilitating the transportation of produce, but the travelling from north to south, and east to west, would afford that species of profit which is ordinarily of great value; and the daily mail would be transported upon it, through the State. It may well be doubted whether any work which claims our attention, would, at an earlier period, repay the investment necessary for its construction.

The canal and these two great lines of rail road communication, would, in the opinion of the board, form the proper basis for a great system of improvement; and would of themselves, accommodate the leading interests of the State. Such lateral roads as might be necessary, would, from time to time, be constructed by individual enterprise, with or without the aid of the public treasury.

It has already been stated as the opinion of the board, that no general system of improvement can be effected in North Carolina, by incorporated companies. In old and wealthy communities, individual capital may be commanded for such objects. The internal condition of England and Scotland has been improved in this way. No intelligent writer, however, it is believed, has ex-

pressed a doubt that even, in those countries, plans of much more extensive usefulness might have been devised and executed by the government. Individuals make improvements without any regard to the situation of any section of the country, other than that in which they are immediately interested. Hence it has frequently happened, that particular works, constructed without any reference to a general plan, have been rendered entirely useless by the ultimate selection of a more extensive and judicious location for a road or canal. Numerous instances in both these countries, exemplify the correctness of this remark. Immense expenditures of capital, upon works subsequently rendered useless by the success of greater and rival enterprises, have returned no profits to the stockholders, and subtracted greatly from the national wealth. If we expect to escape their evils, we must avoid their errors. The great outlines which, in the nature of things, are not likely to attract, or be compassed by individual effort, should be marked out by the Legislature, effected by the public treasure, and be exclusively under public control. Such has been the system adopted by New York, Pennsylvania and Ohio, and is the only system that can succeed here. Who believes that the great Erie Canal would have been cut in a century to come, by individual enterprise? Who can now assign limits to the improvements which may be hereafter effected by that great State? If we proceed with less, but not small resources, with like spirit, and on the same system, we too, may do something for the honor of human nature, and give to North Carolina a name among the nations of the earth.

MANAGEMENT OF HOGS—BEETS PROPOSED AS PART OF THEIR FOOD.

January 15*th*, 1834..

Mr. Editor,—It is very certain that the Farmers' Register never can prove very beneficial to any particular section of country, unless your subscribers from that region, give to the public, through the medium of your journal, the result of their experience. I am sorry that so few communications have appeared from the Middle Country. It is a trite but true saying, that "every man's business; is no man's business" we all wait for each other, and I am determined to send you an article for publication, hoping that others more capable and more experienced, will follow the example. My farming career has been so short, and so much interrupted by professional business, that I have but little to offer at present. I begin, however, to apprehend that in future, I shall have more leisure than may be altogether desirable, in consequence of a new "notion," which seems to take wonderfully in our portion of the community, and which threatens to make at least some of the "Old School Physicians," pay more attention to their farms than they have done. Without further preface, I will proceed to state a few circumstances which have occurred to me during the last twelve months, relative to my management of hogs: as I hold it a sound principle, that experience may be acquired from a knowledge of those methods which fail, as well as from those which succeed; at least, in agricultural pursuits.

I have been in the habit of purchasing more than half of my pork every fall, and if I have no better luck in raising hereafter, shall find it to my interest to buy the other half also. I had a fine litter of pigs about Christmas twelve months, from what was called a very fine breeding sow; her excellency, however, consisted in prowling all over the neighborhood, in defiance of gates and fences, and withal, keeping in such order as to give a poor idea of having met with good cheer in her perambulations. I put her up more than a month before she pigged, hoping to make something like bacon of her, in the course of the winter. She was kept up, and well fed with corn, until about the first of February, (as well as I remember)—when despairing of making any thing of her, I again turned her out on the commons. I only mention this to show that her pigs, nine in number, and well grown, had every chance to thrive. They had, moreover, access to all the offal of the kitchen, were fed regularly after separation from the sow, and ran on clover and wheat, with rings in their noses;—about the middle of May I inclosed a lot, containing considerably more than half an acre of good clover, and put them in it: here they remained as long as the clover lasted, with a small allowance of corn every day. After the clover gave out, having no pumpkins, they were fed on peaches and apples till those crops failed, when I resorted to corn alone. Nothwithstanding this, they barely kept in tolerable order, and when butchered in December, they averaged less than 55 pounds! You will readily agree with me, sir, that this method will not answer.

My prospect for hog meat another winter, is still worse. I had nine or ten shotes, which came about harvest, which I "turned out" to shift for themselves, as is much too common with the farmers around me. These had a small allowance of corn every morning; that is, the corn was given out, and daily carried to the place where the pigs were expected to "come up." How much was given, I will not undertake to say. One remark I will make by the way, that most of the negroes about me are permitted to raise hogs, and although they feed on "*meal-husks*," always contrive to have the best hogs. My shotes, under this management, after committing many depredations on my corn field, strayed off, and have dwindled down to three or four runts, which will probably not survive the winter, unless put up again, and fed on corn. This latter method then, which is the most common with us, is certainly not likely to prove much better than the first mentioned; and some other must be adopted, or I must hereafter purchase all my pork.

I will now digress from the subject of hogs, though it will be seen to be connected with the same. In the month of April last, I had planted in my kitchen garden, six rows of beets, two of the early turnip, and four of the blood beet. The seed, I must not omit to mention, were obtained of Dr. James Cooke, of Fredericksburg. The rows were four feet apart, and the plants twelve inches from each other in the rows. I paid very little attention to them, except to have them worked once with a grubbing hoe, and the grass and weeds kept under with a common weeding hoe; cabbages were planted between the rows of beets. You will recollect the season was unusually dry—and all the vegetables were nearly destroyed by drought. My beets, however, turned out very well; one dozen of the largest, weighed 66 pounds, an average of 5½ pounds—one dozen more might

have been added, without diminishing the average weight more than half a pound. The largest taken up, weighed 10½ pounds, and measured 20 inches in circumference; several others nearly as large, were left for seed. I do not mention this as any thing very uncommon, for I have heard of much larger beets, but only to show what may be done in this way, by a little attention. Adjoining my beet patch, I planted eight rows of mangel wortzel, but so few came up, that they were abandoned; some half a dozen or more roots, however, literally without cultivation, attained a very respectable size, nearly as large as the average size of the beets, although the ground was inferior, thus showing the superiority of that species, if size is to be the criterion of utility. I think it more than probable the beets would have attained a much larger size, had not the tops been pulled off for milch cows. This I am satisfied is wrong. In very wet seasons, it may not be very important. I have made some little calculation of the probable quantity of good nourishment which may be in this manner made on a half acre of land, well prepared and cultivated, according to the little experiment mentioned. I think I am moderate in saying, that nearly fifteen thousand pounds might be raised in an average season. Here is the calculation. A half acre is 210 feet by 105. The rows to be three feet apart, and the roots one foot from each other—70 rows of 105 roots each, will give 7,350 roots, which at the moderate estimate of two pounds each, will be 14,700.

This calculation would be far below what might be reasonably expected, were we to make no allowance for missing plants, and not taking into consideration also, the fact, that it would be necessary to begin on the roots, before they could attain their full size.

I would have the ground prepared as early as possible. It is almost needless to say, the ground should be ploughed *very deep*; a plenty of manure, tolerably well rotted, applied, and the harrow run over it as often as might be necessary to pulverise it properly; the ground to be kept clear of weeds and grass, while the young plants are coming on; and, after they attain a sufficient size, a common coulter to be run twice or three times in each space, very deep. It might be well to repeat this operation, if the land should become close; I would divide the patch into three parts, one part to be devoted to the early turnip, but one to the blood beet, and one to mangel wortzel, to be used in the order they are mentioned.

The turnip beet may be used in June; after the cold weather sets in, they may be preserved as usual in cellars, laid away in dry sand, or in pits.

Now, Mr. Editor, let us bring the hogs and the roots together. Will the hogs eat the roots, and will the roots fatten the hogs? This seems to me to be the greatest difficulty, and this is the point on which I wish to be informed.

I think, with the addition of as much corn as is usually given to our "out hogs" during the year, (previous to the time of fattening them for pork,) ground into coarse meal, to the boiled roots, we might do infinitely better than we are now doing. An essential part of this plan is to keep up the hogs the whole year, in a small lot, with a good shelter in winter, and shade in summer. I believe the time saved in looking for hogs, would be sufficient nearly to cultivate the roots. But supposing it not sufficient, we can surely spare time enough to cultivate half an acre, or even a whole acre of ground, provided we can obtain such results as I believe are almost certain.

This plan may be new, or it may not be. If it be new, it certainly deserves trial; if not, some one who has tried it, will oblige me by giving to the public the result of his experience. I shall try it, and I hope others will do so likewise, if they think the scheme plausible. Another remark, and I am done. The breed of hogs is a very material point, for we know that there are *runts* and "*garrons*" among hogs as well as among horses, and I should be under obligations to you, sir, or any of your correspondents, for such information as may enable me to get into the best stock of hogs. I believe we have no stock to which so little attention is paid to the breed.

Should you think the above remarks worthy of insertion, you can publish them, only omiting the name of the county—and subscribing, instead of my real name, A POOR FARMER.

[The mode of managing hogs by our correspondent, and his ill success, are not so uncommon, as for his statement to endanger the *incognito* which he is desirous to preserve. There are but few farmers of Eastern Virginia, (and we certainly are not among those few exceptions,) who are sure that the pork they make does not cost them its full market price, in the corn consumed by the hogs, and the time and trouble required to take care of them. One of the various causes which produce this state of things, is certainly that which "A Poor Farmer" has slightly touched upon, and which deserves consideration in more respects than this. Hogs can be kept fat by our slaves, though not by the masters—and supposing them to cost nothing, many persons permit this plan of raising hogs, as a cheap mode of supplying negroes with a part or the whole of their year's pork. If they are supplied by the master with the lean pigs, and a reasonable allowance of grain in aid of their year's support, it will be found that there is but little economy in the plan: and if these are not furnished, and the slave is merely *permitted* to keep a hog, he had as well be told by his master, in plain English, "steal a pig wherever you can do it safely, and steal enough corn to feed him through the year, and to fatten him for slaughter at Christmas, and you may thereby have as much meat as you can gormandize and waste, until March, after which you will either eat bread alone, or steal and kill lean hogs from my neighbors and myself, until your next hog is fat." This practice tends to corrupt the morals of slaves—indeed almost compels them to resort to pilfering—and if it does not cause loss to each individual who permits it on his farm, it is because his slaves pilfer abroad, more than at home.]

AGRICULTURAL ENTERPRIZE.

At a meeting of the Ohio Company for the Importation of English Cattle, held at Madeira's Hotel, in Chilicothe, on the 27th Jan. 1834, it was resolved, that Mr. Felix Renix, of Ross county, a successful dealer in stock, and an excellent judge of cattle, be appointed agent of the company to proceed to England, with as little delay as possible, for the purpose of selecting and purchasing a stock of the finest cattle to be met with in that country.

OBSTACLES TO THE DIFFUSION OF AGRICULTURAL SCIENCE.

From the Northern Farmer.

Messrs. Editors:—An opinion prevails to a great extent among farmers, that success in agricultural pursuits depends more on the number of acres cultivated, that on the science and skill of the cultivator—more on the amount of labor bestowed, than on the skill with which it is applied.

This opinion might have been just, fifty years ago, in some sections of New England (so far as respected the immediate profits of cultivation,) when the lands were new and unexhausted of those principles of fertility, which had been accumulating for thousands of years, by the decomposition of vegetable matter: but such opinions now, in their effects, must be ruinous to the country, as they form the most insurmountable obstacle to the diffusion of such knowledge and practical skill, as would enable us to restore to its original fertility the lands which our fathers have exhausted by such injudicious husbandry. It is not at all surprising that the farmer who has been brought up under the influence of such opinions, should still pursue the course, which his father pursued, with such apparent success. True, he is unsuccessful, is falling in debt, and perhaps his farm is mortgaged; but he attributes his want of success, to unfavorable seasons, misfortune, or other circumstances beyond his control; without once stopping to reflect, that the entire different condition of his farm requires an equally different course of cultivation. Prejudices, in favor of old modes and old principles, shut out all inquiry from this whole class of farmers. Ask them, why they do not subscribe for some one of the agricultural papers, which are read with so much eagerness by our most intelligent and successful farmers, and they will tell you, that their knowledge on these subjects is already more extensive than their power to execute; that they possess all the skill necessary, but that they have not the means of commanding the labor requisite to make the improvements they wish.

Another important obstacle to the diffusion of correct knowledge on agricultural subjects, is the prevailing taste, among farmers, as well as all other classes, for local politics. Many of our farmers have so much of the care of the Commonwealth upon their hands, that they are compelled to neglect their own private affairs. This is, no doubt, what is understood to be *patriotism*, in these days; but it is most certainly bad husbandry. Ask one of these politicians to subscribe for an agricultural paper, and he will tell you, he is taking, one, two, and perhaps three political newspapers, for which he pays; and perhaps, has two or three others sent to him without pay. This is almost sure to be the case with such prominent politicians as have neglected their own affairs, for the *public good*; or, what is precisely the same thing, for the *good of* office seekers. This class, therefore, have neither taste nor time, for improving either their farms or their understandings; they are full of business and bustle, in settling the affairs of the nation, till some revolution of the political wheel divests them of all their consequence; and then, it is too late for them to learn first principles, or attend to the more humble business of agriculture.

Neither of these classes can be prevailed on to subscribe for, or read agricultural papers; for the one class is too wise already to profit by them, and the other too busy to attend to the humble science which they teach.

Another obstacle to the more general diffusion of this important science, is, that, that class of our citizens, who patronise agricultural publications, and who really believe in their great utility in promoting the best interests of the country, are too sparing of their influence and of their pens on this subject.

Every intelligent farmer who reads an agricultural publication, should feel interest sufficient, to induce him to communicate something, once a year at least, on this subject, for publication; and he might also, if he would exert his influence on others, (and such individuals always possess influence,) furnish without much trouble to himself, one additional subscriber to such a paper, annually. In this way much might be added to the value of these publications, and their benefits be much more widely extended.

The obstacles, however, of which I have spoken can never be removed, till a spirit of inquiry shall be awakened among farmers, till they shall believe it necessary to read and examine, as well as to labor: nor until they are convinced that science is as necessary to success, in the pursuits of agriculture, as in any other business of life.

FARMING IN MASSACHUSETTS.

Extract from the Report of the Examining Committee appointed by the Middlesex Agricultural Society.

Mr. How's farm contains 117 acres, well proportioned with the various kinds of soil, which are necessary to make a farmer more active. This farm, purchased by Mr. How, about 40 years ago was destitute of fences, except brush and wood; and the buildings nearly decayed; and not more than one ton of English hay cut on the farm. By the industry and hard labor of Mr. How, the farm now is in good state of cultivation, with 933 rods of wall, 400 rods of ditches, a large house, two barns, sheds and out buildings, necessary for a farmer, built by Mr. How; a good stock of cattle, and now cuts 20 tons of English hay, 10 tons of meadow hay; grain and other produce in proportion. The improvements on this farm have been made chiefly by draining the low lands, and taking the manure from the ditches and putting it on the high land, previously passing through the cow and hog yards, and also by levelling with hoes rough and boggy land, and covering the same with sand or gravel, manure and hay-seed; which your Committee think far better than ploughing where the soil is wet and heavy. The labor that has been performed on the farm was chiefly done by Mr. How's own hands and team. We are of the opinion, that much of the labor on the walls must have been done at a season of the year, when many other farmers have been sheltered from the severity of the cold. We cannot select any part of the farm as having any extraordinary mode of cultivation; but each part has been made subservient to the benefit of the whole. By a long and steady course of industry and good husbandry, the farm which was of little income, has now become a profitable field. The labor of cultivating and gathering the crops are performed by Mr. How, and a boy with a team; it is now a very productive farm according to the laborers.

Mr. Moor's land, which we have examined, is about 60 acres, chiefly swamps and meadow land. In 1826 the produce was equal to keeping one cow. In 1830, 1831, 1832, and 1833, there were from 40 to 50 tons of English hay cut annually. This land lies about half a mile east of Concord meeting house, and is known to a large portion of the county. The mode of cultivation has been first by taking from the soil from 6 to 10 inches, then levelling with sand or gravel, and spreading manure; second, by ploughing and hoeing; third, by levelling the ground with the hoe and covering with sand or gravel and manure. The last mode is thought to be the best, it being less labor; and frequently covering it with a little gravel and manure, it will always hold good. Some of this land is worth from 100 to 150 dollars per acre; bearing from $1\frac{1}{2}$ to $2\frac{1}{2}$ tons per acre, which for seven years previous the income was not one cent per acre. It is difficult to ascertain the expense of reclaiming an acre of this land; but no man need fear to undertake it, for it will amply compensate him for his labor. Your Committee are of opinion, that if more labor was laid out on swamps and meadow lands, that do not produce any wood, and less on high and rocky land that might produce wood, it would be much for the interest of the farmer and country at large. Although but two applications were made us to examine farms, your Committee did not pass by any without casting an eye on them: they are happy to say that many of the farms made a fine appearance, and as they had two premiums not disposed of, they would have been willing to have awarded them if application had been made. There were many farms which needed great improvements, and the Committee would recommend their owners to double their diligence, that they may obtain premiums; they would also strongly recommend to farmers and all others a little attention to their door-yards, and the highway near their houses. A little time spent in removing such things as are not necessary, would add much to the appearance of the situation, and to the convenience of their visiters.

THE LARGEST TREE IN THE WORLD.

From the Cabinet Library.

The boabab or monkey-bread (*Adansonia digitata*) is the most gigantic tree hitherto discovered. The trunk, though frequently eighty feet in circumference, rarely exceeds twelve or fifteen in height; but on the summit of this huge pillar is placed a majestic head of innumerable branches fifty or sixty feet long, each resembling an enormous tree, densely clothed with beautiful green leaves. While the central branches are erected the lowest series extend in a horizontal direction, often touching the ground at their extremity; so that the whole forms a splendid arch of foliage, more like the fragment of a forest than a single tree. The grateful shade of this superb canopy is a favorite retreat of birds and monkeys; the natives resort to it for repose, and the weary traveller in a burning climate gladly flies to it for shelter. The leaves are quinate, smooth, resembling in general form those of the horse chesnut. The flowers are white and very beautiful, eighteen inches in circumference. The fruit, which hangs in a pendant manner, is a woody gourd-like capsule with a downy surface, about nine inches in length and four in thickness, containing numerous cells, in which brown kidney-shaped seeds are imbedded, in a pulpy acid substance. The timber is soft and spongy, and we are not aware that it is used for any economical purpose. It is very easily perforated, so that, according to Bruce, the bees in Abyssinia construct their nests within it, and the honey thus obtained, being supposed to have required a superior flavor, is esteemed in preference to any other. A more remarkable excavation is however made by the natives; diseased portions of the trunk are hollowed out and converted into tombs for the reception of the bodies of such individuals as, by the laws or customs of the country, are denied the usual rites of interment. The bodies thus suspended within the cavity, and without any preparation or embalment, dry into well preserved mummies. The juicy acid pulp is eaten by the natives, and is considered beneficial in fevers and other diseases on account of its cooling properties. The duration of the boabab is not the least extraordinary part of its history, and it has given rise to much speculation. In it we unquestionably see the most ancient living specimens of vegetation. 'It is,' says the illustrious Humboldt, 'the oldest organic monument of our planet;' and Adanson calculates that trees now alive have weathered the storms of five thousand years.

CULTURE OF BARLEY.

From the Genesee Farmer.

Barley, like hops, is annually becoming of increased importance in our agriculture. We are told that more than two-thirds of the barley raised in the United States is the produce of this state, and that this is almost wholly grown in the northern and western parts. The quantity marketed at Albany and its neighborhood, in 1833, is stated at 450,000 bushels. This, estimated at seventy-five cents a bushel, makes an aggregate of 337,500 dollars.

A lack of information in regard to this grain, seems to be prevalent, by which a serious loss is sustained by the farmer, which it is the object of this article in some measure to remedy. There are two varieties of barley grown, one two, and the other six rowed, which will not malt profitably together. The brewer cannot, therefore, afford to pay so high for these when mixed as he can for either sort separate. One has a thick, the other a thin skin. The first requires a longer time in the process of malting than the latter; and of course, when mixed, the thin skinned is overdone, and materially injured, or the process must be terminated ere the thick skinned has developed all its saccharine matter. Where the brewer buys directly of the farmer, he is in a measure enabled to prevent this mixture, by keeping each sort separate; though the farmer himself, not being aware of the consequence, is not sufficiently careful to keep the kinds distinct. But when the grain is bought in by the merchant, or goes to market in a canal boat, an indiscriminate mixture takes place, and the value becomes sensibly diminished. The loss in this way last year is stated at ten per cent. upon the whole product, or equal to 45,000 bushels.

We hope these hints will serve to induce the farmer to sow only clean seed of one variety, and the merchant and boatmen to consult their interest, by keeping the two kinds separate.

Although wheat is, and is likely to remain the

great staple of the west, yet there are many of the lighter soils suited to the profitable culture of barley. We will therefore make some suggestions as to its culture, which may benefit those who are not already familiar with it. The two rowed, which is thin skinned, we believe is the most esteemed variety. The best seed for sowing is that which is free from blackness at the tail, and is of a pale lively yellow color, intermixed with a bright whitish cast; and if the rind be a little shrivelled it is so much the better, as it shows that it has sweated in the mow, and is a sure indication that its coat is thin. The seed for strong land should be grown on a light or warm soil, as it will ripen some days earlier, and has the thinnest skin; and the seed for light should come from strong land, otherwise it degenerates in bulk and fulness. A change of seed is more important in this than in most other grain.

Barley produces best upon a light rich loam; and is neither adapted to a light sand nor a stiff clay—it does better upon corn than wheat soils. It may be sown upon a clover ley, or after a hoed crop, which has been well manured; but recent manure should by no means be applied to the barley, as it induces a rank growth, and causes the grain to lodge. When the plants are three or four inches out of the ground the roller may be passed over the field with great advantage. By often burying the crown it causes the grain to tiller, or multiply its seed stalks, and causes a beneficial compactness to the soil. It should be sown upon the fresh ploughed soil, and well harrowed in. Grass seeds may be sown with this crop to advantage. The product is from 20 to 70 bushels per acre, according to the fitness of the soil, its fertility and the favorableness of the season. B.

A CROP OF CORN IN COLUMBIA, N. Y.

The following article has an additional value from relating to the same farming region, which was treated of in the communications from Dr. Beekman, and Mr. Harder, presented in the February No. of the Farmers' Register.

From the American Farmer.

Mr. Sanders of Clermont, Columbia county, New York, raised the last season a crop of corn averaging about eighty bushels (of shelled corn) to the acre. He was honored as he well deserved to be, with a premium from the Agricultural Society of the county, in his application for which, he gives the following account of his *way*.

Extract from Mr. Sanders' Communication.

"The ground on which the above crop was raised, is a sand loam in excellent heart, with a rich clover sod, two years from seeding, turned over in the early part of May last; and with a view to mellow the surface, once harrowed over before planting. The corn was planted about 20th of May, and as near as the furrows could be calculated accurately, as made with a corn plough, planted about 2 feet 8 inches apart each way, placing 4 kernels in each hill, so as to insure the growth of three stalks, which is a desirable number, although four were felt, if their appearance was healthy. The land was again harrowed when the blade became about six inches long, if extended—in a few days thereafter, say ten, the corn plough was passed through in one direction, and the whole well hoed; and again, when the blades becames 18 or 20 inches long, the plough was passed through twice in the contrary direction, which was the last operation until the stalks were topped, and that not done before they were nearly ripe that the grain might derive full benefit of sustenance from them.

"I am confident in the opinion, that while the blades are small, say until 18 or 20 inches, corn land cannot be too much stirred, as it subdues all vegetable matters that subtract from the nutriment that should apply to the growing stalks, and properly mellow the soil to be penetrated by the tender roots of the plant in search of food. But after the plant has attained the height of 2 feet or more, I conceive any operation on the soil, (except upon the surface, by a corn cultivator or simple hoeing,) injudicious; for the plants having then extended their roots in great number, must be injured by any process of ploughing, by the same parity of reason, as the growing tree is frequently destroyed where its roots have been disturbed.

"The observation of your applicant upon this mode of cultivation was, that his corn field kept remarkably free from weeds, or any vegetable substance that might injure the yield. The expense beyond the most ordinary mode of cultivation, did not exceed that of harrowing, as until the middle of September last, I did not indulge the idea of entering for premium. Had it been so intended in spring, I should have tested the experiment on J. Buel's plan, by drills, selecting from the three modes proposed by him, the two drill system, as most applicable to my land. The method in relation to the corn crop above detailed, is that generally pursued by me, of its propriety I am induced to think well, as upon 35 acres of land, I am full in the belief, I have raised this season 1700 bushels of corn, and so little defective that an ordinary farmer would have cribbed it without sorting; and I indulge the idea that if a drought had not injured the plants on an upland field at a critical time, my produce would have been much increased."

THE HOME MARKET FOR AGRICULTURE CREATED BY PROTECTING DUTIES.

From the Banner of the Constitution.

The Dog and the Fleas.

A certain shepherd of Bœotia was rearing a sprightly young hound, whose gambols were often interrupted by the fleas, which were feasting at his expense. To relieve himself of these hungry blood-suckers, the puppy was continually using his claws and teeth, and soon became very expert in hunting and destroying this small game, which he munched and swallowed as if fleas were delicious food. The shepherd—(who was a man of that kind of genius which, in our times, would have made him admirably suited for a chairman of the committee of manufactures, or might even have raised him to be Secretary of the Treasury, if he had been a member of Congress from Pennsylvania)—the shepherd, I say, observing the use made of this new kind of food, conceived the sublime idea of making his dog live entirely upon his own fleas, and thus provide a home market for his surplus produce, (that is, as much blood as he could spare,) and afterwards to recover it, improved by the domestic industry, and increased by

the rapid propagation of legions of these active operatives. Accordingly, every means was used to encourage the growth and increase of the fleas. Fresh swarms were combed out of some neighboring dogs, and added to the domestic supply of Towzer, who at the same time was confined to a bed of damp and filthy straw, still more to protect and increase the vermin; while his usual food was reduced, at first, to less than half his former allowance, that he might be compelled to make full use of his new customers, and afterwards gradually still more diminished, as his flea-food was supposed to increase. What was before mere sport for Towzer, now became a matter of most disagreeable necessity. He daily devoured fleas by thousands, as well as the small share of bread still given to him, and as much more as he could manage to steal, but yet became leaner every day.

Though the shepherd was disappointed in not seeing him become fat, he found, by actual measurement, (and he was a man who deemed *one fact* worth a thousand theories,) that, since this treatment commenced, the puppy had grown three quarters of an inch in height, which he imputed entirely to his flea-diet; and thence was sure, that, to make him fat, as well as tall, nothing was wanting but more fleas. Not content with forcing Towzer to submit to his plan, he aimed to convince his reason—(for brutes could reason as well as speak in ancient times)—he represented to him "the great convenience of a home market for his products, and of obtaining his articles of primary necessity at home, instead of being dependent on foreign supplies, to be sought by the very hazardous and uncertain practice of hunting the fields for rabbits—that it was kind and parental treatment to confine him at home, and compel him to cultivate his own resources—that, if the continual biting of his domestic customers was unpleasant, it was only because he had not been long enough accustomed to them, and that any discontented feeling ought to be repressed by considering how patriotic it was for him to support the animals of his own home—and, finally, that Towzer had been growing, and of course thriving, under this blood-sucking system, ever since he had been six months old."

A nimble old buck-flea, who at the same time had been enjoying this fine speech and the opening of a new vein, now came to strengthen the argument. "And, besides," he squeaked in Towzer's ear, "do you not remember, you ungrateful puppy, that we have stuck to you through all your difficulties? When you were first deprived of your mother's milk, and were too young to procure meat, we fleas furnished you our fat bodies for your food, (whenever you could catch us) content with having obtained previously only a few drops of your blood—and so we have continued, and will continue, to aid and serve you, ungrateful as you are, as long as there is a drop of blood under your mangy skin."

Towzer, by way of reply to this last speaker, made a sudden scratch, which dislodged him, and then an ineffectual snap at him as he jumped to a new hiding-place. It was useless, and perhaps dangerous, to dispute the matter with the shepherd, whose closing arguments might be the whip and chain. In a short time the dog died—and his master always remained convinced that his death was caused by his fleas not being sufficiently numerous. "They should have been protected," he said, "until they had increased ten-fold, and then it is perfectly obvious that Towzer would have had ten times as many fleas to eat, and of course would have been in an eminently flourishing condition."

Virginia, July, 1831. R.

BROOM CORN—*Sorghum saccharatum*, L.

From Goodsell's Farmer.

This plant is a native of India, and was introduced into this country about fifty years since.

Under the general name of sorghum, are arranged several species, most of which are cultivated for their farinaceous seeds, which have at different times and by different nations been used as bread stuffs, as the S. *vulgare* or Indian millet, and S. *rubens*, which is sometimes called Egyptian wheat.

The S. *saccharatum*, or broom corn, is cultivated mostly for the sake of the long panicles, or seed stems, which are manufactured into brooms, and for which purpose we know of no plant, that can be cultivated in this climate that would be equally as valuable.

For many years past broom corn has been extensively cultivated as a field crop in New Jersey, Connecticut, Massachusetts, and some other parts of the United States and has been made a very profitable branch of agriculture.

In order to render this a profitable crop it should be planted upon such soils, and in such climates as are found favorable for Indian corn. Wherever the gourd seed corn perfects itself, it is safe to calculate that broom corn will succeed.

Although the seeds of the broom corn may be ripened much further north, than the larger kinds of Indian corn succeed to advantage, yet the panicles or brush will not be so long or valuable as that which is grown in a warmer climate.

The cultivation of broom corn does not differ materially from that of Indian corn, as it may be planted either in hills, or in drills, both of which are practised in the same district to the option of the grower.

The produce of brush varies in different parts of the country, and in the same district in different seasons, but a fair crop may be put at from five to seven hundred pounds per acre.

Although the brush or panicle is the main object of cultivation, yet the seeds are turned to some account when large crops are grown. The quanity of seed produced per acre, may be calculated at from twenty-five to thirty-five bushels, which is pronounced by some to be equal to the same quantity of oats for hogs or cattle.

The price of brush varies in different seasons from five to ten cents per pound. Allowing five hundred pounds as the produce of an acre, and seven cents per pound as price, the produce would be thirty-five dollars per acre. The seed is thought by many to be worth as much as the cost of cultivation.

From the universal use of corn brooms in this country, and also in Upper and Lower Canadas, where the climate is too cool for the cultivation of the plant, there is little danger of the market being overstocked, and farmers in suitable localities, may with safety calculate on the crop as one that will at all times yield a fair remuneration for the cultivator.

There is some diversity of opinion with regard to the manner in which the seed should be allowed to ripen. Some allow the brush to remain upright until it is perfectly ripe, others bend the stalk below where it is to be cut, allowing the head to hang pendulous, by which the panicles are more apt to remain straight. We believe the more experienced growers, only bend those heads that become crooked before they leave the sheath in which, while young, they were enveloped.

The stalks of broom corn which are left after the heads are cut off, should be cut and burned, otherwise they will be found rather troublesome in after-cultivation.

To the Editor of the Farmers' Register.

The enclosed printed page detailing the process of making salt-petre in Virginia, is taken from a copy of the London Magazine, for the year 1763. The simplicity and cheapness of its manufacture may induce not only the theoretical but the practical farmer to make the experiment—an enterprise which if successful, must be gratifying alike to his pride and economy. RUSTICUS.

January, 30, 1834.

MR. JEREMIAH BROWN'S METHOD OF MAKING SALTPETRE;

Published in Virginia by order of the trustees for the Improvement of Arts and Manufactures, and also in England by order of the Society for the Encouragement of Arts, Manufactures, and Commerce.

Saltpetre is to be found in tobacco houses, stables, cowhouses, hen and pigeon-houses, and in any covered place where the influence of the sun seldom reaches. A sixty feet tobacco-house will yield upwards of 16 C. wt. a year, and so in proportion far larger or smaller houses.

In order to prepare the floors for attracting nitre, all dung and other trash must be removed; and if the floors are not level, they must be made so by laying on marl, or any soil not too stiff, which must be lightly trod down with their feet.

The floor being thus prepared, sprinkle strong ambeer over it, made from tobacco-trash, and cover it with wet ground leaves, or other tobacco-trash, for a fortnight; then clean out the trash, and in any cool dry morning that succeeds, you will find on the floor the nitre attracted and condensed like hoar frost; sweep this off lightly, and put it by in some hogsheads, or safe place in your house, until you have leisure to go through the following process. This work you must carefully repeat as often as you observe the above mentioned appearance of nitre on your floors; by which means you will soon be furnished with a competent quantity to employ a leisure day.

The process. Make a ley from this earth in the same manner as is usually done for soap, noting that the earth is not to be hard packed on the straw in the bottom of your ley vessel, which would retain the water to be poured on it too long, and overcharge it with saline particles, to the great interruption of the process: place the earth hollow in the vessel, for the reception of the water; the first put to it must be warmer than new milk from the cow; afterwards add cold water: fix a vessel to receive the ley as soon as you begin to put the water in, as it will not remain long upon the earth, but in a few minutes begin to drop into the receiver: If it runs foul, it must be returned upon the earth; as soon as it has dropped a gallon, you may begin to boil it in a cast-iron pot. Every bushel of earth will require near eight gallons of water. Continue to boil it gently until you have fully charged your pot with the ley, and you will find the watery particles evaporate until it is reduced to a thick oily consistence, shooting into small icy crystals, which you will easily perceive by exposing the suds, in a spoon, to a cold place: Then put the liquor out of the pot into wetted wooden trays, and set it by in a cool place for the first growth: If you accidentally boil it too thick, add a little cold water: When your trays have stood with the suds a few hours, you must raise one end to let the ley drain off from the petre-salt, which is the first growth, and which, by boiling a second time, will yield you a fresh quantity.

After it is thus drained and become dry, you may put it into casks or tubs, until you have leisure, without prejudice to your crops, to refine.

Te refine petre-salt. Put into your pot about a third of the quantity your pot will hold of this first growth, and set over the fire: You are to be provided with an iron rod, or poker, to stir it: As soon as it begins to melt, you will see it begin to boil furiously: Keep it well stirred down, as at this time it is very apt to take fire, which will destroy the whole; when you observe it in the boiling to look of a dirty white, slacken your fire, and stir it briskly for a quarter of an hour; then increase your fire, and continue the stirring, though the danger of burning it is now over: The pot, before it is sufficiently melted, will be at the bottom, of a flaming red, and the matter will appear like boiled cream; and when it becomes whitish and liquid, pour it upon a stone, or some earthen vessel or a hard well-rammed earthen floor, clean swept. As soon as it is cold, it will become hard, and if you throw it upon a stone, will ring like broken china.

If you have not leisure immediately to clarify it, put it into a tub in a dry place until some convenient opportunity.

To clarify coagulated cream of nitre. To every pound of this matter, put six pounds of water, after you have broke it into small pieces: Put your pot upon the fire, and stir it until it is well dissolved; then make the fire all round the pot, which will cause it to boil in the middle, and prevent any waste by its drying and sticking on the sides of the pot; and as soon as the earthy matter begins to settle in the pot, pour the liquid into a tray, or other open vessel, that its sediment may settle: Pour off the clear liquor, and evaporate it with gentle fire, until in a spoon it will shoot into crystals: then pour it into your tray, with dry sticks fixed across, so as to be a little below the surface of the liquor: set this by in a cool place, where it may stand until it shoots into clear transparent crystals; then pour off the liquor, and set the tray so as to drain it off perfectly dry.

Thus your salt petre is completely made, and in a few days will be dry enough to remove out of your trays into casks or vessels proportioned to the quantities.

The liquor you last poured off must be again evaporated over the fire, for it will yield salt petre equally good as the former; and thus continue the operation, until all the watery particles are totally evaporated.

N. B. The earth from which you have extracted the salt petre, and all the washings of your vessels, if you lay it by thinly spread, in your house will turn to profit, as it continues to be peculiarly proper to attract and absord the nitre floating in the air; add also the earthy matter which settles in the refining: And should you be in want of house room, you may spread it upon the earth, covered in the manner that fodder stacks are; It will produce salt-petre full as well as a tobacco-house, taking care that the north-end be always open, and that it be defended as much as possible from rain.

OPINIONS OF THE ARABS, CONCERNING THEIR HORSES OF THE MOST APPROVED STOCK.

From the Memoirs of Sir James Campbell, (lately re-published in Waldie's Circulating Library.)

The route of the caravan lay at first through the great desert of Syria, and then through the country of Hamah, the most celebrated in the world for its breed of horses; and this was a circumstance peculiarly agreeable to me, as I was desirous of all things to carry home with me a horse of that unequalled race. The purity of the breed is ascertained and preserved in this country with greater precision and facility, in consequence of the horses and mares, to the number of one hundred and upwards, being uniformly held in common property, by a particular family or tribe. The line of succession is preserved with all the care and all the accuracy perhaps of a Welsh pedigree; and in the genealogical tree of the horse which I ultimately purchased, its descent was professedly traced to the famous black mare of Mahomed, and I had a certificate of the fact, subscribed by five or six sheiks, who have an obvious interest in keeping up the value of their breed of horses by this exactness in their pedigree.

It is on the mares, however, that the chief value is placed, and through them it is that purity of blood is most depended on. The sister of the horse which I brought home with me, was for sale at the time I made the purchase. I examined her with the greatest care, and could not detect the semblance of a fault in any one of her points. Like all the others of the race, she was under 15 hands high; and the price put upon her by the tribe to which she belonged was 10,000 piastres, equal to 2,500*l.* of our money. The value of the mare is always much greater than that of a horse of equal symmetry, from the idea of her greater influence in preserving the purity of the race. The price I paid for the horse, own brother to this mare, was 800 Venitian sequins, equal to about 400*l.* sterling; and I incline to think it was not far out of proportion, according to their ideas, to the price of the other.

While I was yet in the district where these horses are bred, an agent arrived from the King of Prussia, commissioned to make purchases for his majesty. He agreed with me in admiring the mare, and declared that she was the handsomest animal he had ever seen. He was even willing to give the 10,000 piastres for her, but the tribe had come to the resolution of preserving her as a brood mare, and refused that sum when offered. It is to be observed, however, that there are two distinct races in the country, the noble and the common. Among the latter, many beautiful horses are often to be found, but they never possess those qualities in perfection for which the noble race of Arabia is so peculiarly distinguished—fleetness, wind, and bottom.

Here, too, I must observe, that the horses brought from Barbary are not to be compared in any good quality with the noble breed of Hamah. Many of the Barbs have radical faults, and some of them are very ugly, goose-rumped, cat-hammed, and narrow chested. The difference of the breeds was long unknown in this country, but now it is better understood, and a Barb I believe is seldom bred from.

I shall here mention a circumstance on the authority of persons in that country whose good faith and respectability I had no reason to doubt, as illustrating in rather a striking point of view the marked distinction between the different races of this noble animal, which are reared in the same district.

An Arab, who had pitched his tent in a solitary spot of the desert, had occasion to leave his family, with his stock of the common breed of horses and mares, for a single night. On his return to the place in the morning, he found that his family and his whole property had been carried off in the night. He was mounted on a horse of the noble breed, and of the highest qualities, and having a rifle with him, he set out alone in pursuit of the robbers. On coming up with them he found that their numbers were considerable, but he had reason to believe that they were not possessed of fire-arms, which proved to be the fact.

Approaching near enough to bring them within the range of his gun, he fired and wounded one or more of them, and waving his hand he dared them to follow him. This they attempted, but found it fruitless. He then returned to the attack, and again succeeded in singling out one or two of them with his rifle. Once more they pursued him with the fleetest of their horses, but to overtake him was impossible. Thus he hung upon their rear, wounding and killing several of them, until he at length compelled them to restore the booty.

The accoutrements of the Arab horsemen are simple in their construction, and well suited to his wants. The saddle is generally large, and always easy to ride on. The straps are made of untanned leather, and are fastened without buckles. A ring is attached to the end of the girth, and another to the corresponding part of the saddle. Through these rings a strap is repeatedly passed, and drawn together with such force as to bring them near to each other, after which, the strap is fastened by twisting the ends round the part thus tightened. The saddle thus fixed is never displaced, and, indeed, seldom taken off, except for the temporary purpose of grooming, when it is again immediately replaced, although there be no intention of riding. Cruppers are seldom used, because they are not necessary to keep the saddle in its place, and because they never carry any thing behind it. The shoes are a thin flat piece of iron, with a hole in the middle to keep the foot cool, something in the form of our common bar shoe, but extremely light, and even flexible, so as to yield with the foot when pressed upon a stone. The numerous diseases to which our horses are liable are scarcely known in these countries.

Sometimes, indeed, I have seen a lame horse, but upon inquiry, the cause was generally to be traced to some accident, either in a skirmish, or

from riding violently, which they do without hesitation over the roughest ground. Although never a very timorous rider, I have frequently felt somewhat uneasy at the style in which they carried me over a country which the boldest rider in England would hesitate to follow. In going down a declivity not less, perhaps, than forty-five degrees, where stones as large as a table were scattered about in all directions, I was proceeding with some caution to guide my horse over the difficulties of the ground, when an Arab called out to me, and I was induced ever afterwards to follow the advice,—"Give him his head, he sees the stones as well as you do."

Every body has seen the Turkish bridle; they never use a curb, but the ring which is put into the mouth serves the same purpose; the bit, which is very light, acting so powerfully, by means of the lever attached to it, as to force the mouth open and keep it so: neither do they ever use the snaffle, or bridoon; I tried it in the hope of its easing the mouth, but to horse and rider it proved equally inconvenient. Although they use such powerful bridles, the Arabs ride with a heavy hand, so as to sustain the horse in advancing, and to curb him in action. This they are able to do very effectually, and in throwing the jereed it is absolutely necessary. Perhaps the most remarkable point about the Arabian horse is the extraordinary smallness of the head and mouth,—so small, indeed is the latter that you would think they might use a common tumbler for a water bucket.

The stirrup used by the Arab is singularly short, but the seat of the rider is not on that account the less secure, and it enables him, in rising on his stirrup to throw the jereed, or to strike a blow, to do it with an infinitely increased effect. The sudden jerk which is often given in these exercises to the stirrup-leather, makes it necessary to secure it much more firmly than we do. This is done by ten or twelve straps or thongs, and the stirrup, in place of being a narrow bar, is so constructed as to allow the whole foot to rest on a plate of iron reaching from the toe to some distance behind the heel, where it is sharpened so as to serve the purposes of a spur.

TRAINING OXEN TO BACK.

From the Maine Farmer.

Mr. Holmes: I have observed that very little, if any attention is paid by our farmers to learn their steers to back; but as they become able to draw a considerable load forward, they are often unmercifully beaten on the head and face, because they will not back a cart or sled, with as large a load on as they can draw forward, forgetting that much pains have been taken to learn them to draw well forward, and none to learn them to push backward. To remedy the occasion of this thumping, and the delay which is always disagreeable, as soon as I have learned my steers to be handy, as it is called, and to draw forward, I place them on a cart where the land is descending in a small degree. In this situation they will soon learn with ease to back it; then I place them on level land and exercise them there; then I learn them to back the cart up land a little rising—the cart having no load in it thus far. When I have learned them to stand up to the tongue as they ought, and back an empty cart, I next either put a small weight in the cart, or take them where the land rises faster, which answers the same purpose. Thus in a few days they can be learned to back well, and know how to do it, which by a little use afterwards they will never forget. This may appear of little consequence to some, but when it is remembered how frequently we want to back a load when we are at work with our cattle, and how commodious it is often to have our cattle back well, why should we not learn them, for the time when we want them, thus to lay out their strength. Besides it saves the blows and vexation often encountered, which is considerable when one is in haste. It is a merciful course towards our brutes. I never consider a pair of oxen well broke until they will back with ease any reasonable load, and I would give a considerable sum more for a yoke of oxen thus tutored, than for a yoke not thus trained. A TEAMSTER.

CANAL BOATS.

From the Genesee Farmer.

Canal boats constructed upon the new principles to which we lately made reference, are in operation in England as well as in Scotland. We have been shown a letter from Lancashire, England, which states, that boats now ply upon their canals, at the rate of ten and twelve miles per hour, drawn by horses, which are relieved by a fresh team at the end of every five miles. The boats are sixty feet long, and five feet wide; built of *sheet iron*, covered with a canvass awning, carrying one hundred passengers, and draw only two feet water. We may soon expect to see this improvement adopted in boats upon our canals. It will reduce the time of a passage from Albany to Buffalo to thirty-six or forty hours; and most ultimately affect the value of rail road stocks, upon routes parallel with canals. B.

A FEW HINTS TO TOBACCO GROWERS.

To the Editor of the Farmers' Register.

Mecklenburg, Va. Jan. 17th, 1834.

I much lament, Mr. Editor, that the subjects proper for discussion in such a paper as the Farmers' Register, should elicit so little of the talents and attention of this part of the state. That such should be the case, is a circumstance wholly unaccountable. That a good degree of interest exists here, on the subject of agriculture generally and the best means of advancing its products, will be readily admitted by all. That there exists no indisposition to a public display of our talents, is manifest from our numerous political meetings, and the many lengthy harangues to which they afford an occasion. That some of our aspiring politicians have occasionally found their way into the political papers of the day, reviling * * * * * * * * in the most profitless manner, is a fact within my own knowledge. Why then is the beautiful and all interesting subject of agriculture so wholly forgotten and neglected? I am fain to believe, Mr. Editor, it is because an essay containing a collection of useful agricultural facts and experiments, will not advance the writer to a seat in our General Assembly, or in Congress. Being myself no political aspirant, but a plain planting man, who loves to speed the plough, and all the other operations of

beautiful and profitable agriculture, I will venture to offer you a few thoughts on a subject which is near to the interest of us all.

I read with peculiar satisfaction and delight the article in the 7th No. of the Farmers' Register, entitled "The Cultivation of Tobacco not opposed to the Improvement of Land," from your intelligent correspondent H. Meade, of Amelia, Va. The article alluded to, gives a clear and concise, but circumstantial narrative, of a simple agricultural experiment, which brings us to the happiest result—a result directly in conflict with the settled opinion of the times; a result which, if we will but imitate, may serve to arrest our country in its onward march to unfruitfulness and sterility. But what struck my attention more particularly, was, that a man should be found bold enough to attack the hoary and giant error that there can be no improvement on estates where tobacco is the crop. The question then is this: must the cultivation of tobacco necessarily produce that barren and wasted appearance which the tobacco region of Virginia every where exhibits. To this question, I answer in the negative; and shall offer a few of the reasons for that opinion, and the method of management which will ensure large and fine crops of tobacco, and an increased fertility in every part of a plantation. Let three scenes on every estate be selected, which, in the judgment of the proprietor, are the most suitable for tobacco. It matters not that they be in three or more pieces, so enough is selected to make three tobacco shifts for his hands. Let these be brought to "tobacco heart," either by the application of manure, or by grassing them from the time of clearing. Upon any estate where ten hands are employed, with the requisite number of teams and cattle, manure enough can be raised in a year, by tolerable attention to the subject, to enrich thirty five thousand tobacco hills or ten acres of land. This I know to be but a moderate effort. Then, at this rate, for a crop of eight thousand hills to the hand, it will require about six years to establish the tobacco shifts recommended—supposing there was no land on the plantation sufficiently fertile to be thrown into this rotation. When the shifts are thus established, let one be cultivated in tobacco in, say 1834—seeded in wheat and clover in the fall after the crop of tobacco is taken off; not grazed or trodden in 1835, after the wheat is cut; in the fall of 1835, or spring of 1836, as experience teaches best, let it be sowed in the proper manner with gypsum. This will insure a luxuriant crop of clover in 1836; and be sure to keep the fact constantly in view, that the clover was put there to fatten your land, and not your horses, cows and hogs. Then in October or November, or as soon as the land is soft enough to be thoroughly ploughed, let it be again sowed with gypsum, at the rate of a barrel for every twenty thousand hills. If the ensuing summer there be any spots in the field which are yellow or unthrifty, let a little gypsum be applied around the plant, and a speedy and thorough cure will be effected; and so on through the successive scenes. When No. 1 is in tobacco, No. 2 will be in clover, and No. 3 in wheat. Here is an arrangement by which two lots out of three are yielding annually a valuable market crop, while the third is manuring itself for the next year's crop of tobacco. It may be supposed by some, that land cannot be kept in tobacco heart at this rotation, but it is a great error. I consider that the year the lot is in wheat, it gains or loses nothing material, and the return of the clover is more than equal to the exhaustion occasioned by the crop of tobacco Here then, your tobacco scenes being established, what shall be done with the immense quantities of manure which is now applied to our tobacco lots? Let us contract the extent of our corn fields by one third or one half, and let them be manured and better cultivated, and thereby produce as much or more than the whole, under the usual system. Let the rest of the corn field be sowed in wheat and clover, or oats and clover, as the owner may prefer, and thus put upon a longer, and an improving rotation. Let us establish extensive meadows, the hay from which, together with our increased crops of wheat, will enable us to double the qaantity of manure now raised, which increased quantity will, of course, increase the material, for making it in a progressive ratio. When, in a few years, the greatest difficulty with our planters will be, the means of hauling it on their fields—and I had almost said, to find a place to put it. These are not visionary or groundless calculations; for as far, as in the course of my observation, this system has in part been adopted, proportionable good results have ensued. May we not then indulge the hope, that upon this or some other system like it, so many of our barren old fields, which are now but haggard and howling wildernesses, may become abundant and smiling meadows. Our mother earth, when exhausted by lavish and injudicious cultivation, is like the human system wasted by disease, possesses a strong and natural tendency to reaction; and if this tendency is aided by kind nursing and little physick, is soon restored to its wonted health and vigor. The system of tillage which is now pursued in this part of Virginia, and which has had the chief agency in reducing it to its present exhausted condition is aptly described by the fable of the boy who ripped up his goose, which fable is but another mode of expressing folly and cupidity. The owner of a fertile piece of land clears it, and instead of taking a crop or two of tobacco from it, and then keeping it in grass and enclosed, until the proper time shall come for another golden egg, cultivates it in tobacco as long as the crop will pay for the labor of cultivation, and then it is cast by, a ripped and worthless carcass, to bear a rapid succession of corn and oats; and when not in crop, the equally desolating effects of grazing and trampling. I do not advocate a system of improvement which is in the remotest manner to interfere with full, successful, and profitable cropping; for I do know that profitable agriculture and the improvement of the soil, are not only perfectly harmonious and compatable, but is in fact, the only mode in which the farmer can realize much clear gains from his estate. I know there are many men in our country, who have amassed large sums of money from planting, who have not only not improved their lands, but who have been so entirely careless on the subject, as to almost entirely waste them in the effort. But, in this case, where is the profit? One estate is reduced to poverty, and rendered almost worthless, whereby the means are acquired to purchase another of equal value.—Would a money lender think his profits were rapidly increasing, who, instead of putting out his money at six per centum, and receiving back at

the end of twelve years, his principal unimpaired, and an equal amount of interest, should demand twenty five per centum, and at the end of four or five years, lose his principal by extortion, oppression, and usury. The cases are, to my mind, strikingly analagous. The practice of cutting down and wearing out land, before it is ever permitted to rest, is one of those cherished sins against the soil which we have derived from our ancestors, without having the same apology for it that they had. They were but thinly scattered over a large extent of fertile country, surrounded by an almost interminable forest, could see no good reason why they should nurse the little fields that surrounded their cottages, and suffer the rich forests to remain the haunt of wild beasts. Nor indeed was there any. But far different is the case with us; we have continued to fell the forest, and wear out, and turn out, long after there was any good reason for it. How much longer this practice is to continue, I know not; but I must hope that we are shortly to awake to the fallacy, and ruinous consequences of a system, which all who think, must deplore and condemn.

I will conclude the few disjointed thoughts which are here offered, by saying, that the want of improvement in our soil does not arise from a failure in any well organized effort to that end, but from a total want of adequate effort itself. There does seem to exist a degree of supineness and indifference on that subject, which to me is unaccountable, and I am afraid unalterable, unless it can be effected by the effort of your very valuable Farmers' Register.

A PLANTER OF MECKLENBURG.

For the Farmers' Register.

GEOLOGICAL ESSAY, NO. III.

[*Continued from page* 540.]

When the earth was formed, or rather, when the elements of it were brought together and placed in its orbit, a certain quantity of animal and vegetable matter was very generally diffused among the various other principles which seem to have taken no part in the formation of living beings; but constitute a very important part of the terrestrial mass. When these heterogeneous matters were collectively blended, forming what is called chaos, according to the laws of attraction, all the grosser matters devolved towards the centre of gravity; and whenever two principals of the same kind fell together, or chanced to meet in the general conflict, the affinity, or attraction which they had for each other, caused them to unite; and although different metals, ores and earths did combine at that time, forming various compounds, yet perhaps this would not have been the case, had each of its kind fortunately fallen within the sphere of their mutual attractions. If this had been the case, and the affinity of aggregation prevailed, and the same laws of attraction perpetuated in all the succeeding combinations of matter, chemistry would not have found a place in the catalogue of the sciences; for the earth would not have exhibited to us that confused and discordant mixture which it now presents to our view. On the contrary, all matter would be more simple, and all bodies, animate or inanimate, homogeneous. Let us suppose all affinity, or that tendency of matter to combination, completely annulled, what would be the state of our globe? Would the essence of matter be the same, or would it be annihilated? Matter, I should suppose, cannot exist if its attraction be taken away; to remove attraction, therefore, is to annihilate matter. The force or power of attraction exerted between particles of the same nature, could not produce any combinations different from the whole, unless it be admitted, that several particles of the same kind uniting, shall produce one essentially different in form and property from those of its constituents; and that these parts, or portions of matter, uniting in the same way, shall produce a third, different from either of the foregoing; and so on, causing an infinite variety of compound matter from the original simple stock, bearing names according to their various qualities and proportions, differing merely in the arrangement of particles.

Perhaps we should be less hypothetical and more systematical, under the impression that this earth was originally composed of a certain number of simple substances; or we may hazard a conjecture, that there were only a few primitive principles, or original species of matter, which have become compounded by attraction and repulsion, causing all that variety in quality and consistency, which observation presents to our view, similar to the different shades and modifications of color, which arise from the various combinations and proportions of the colors which compose solar light. A learned geologist, M. J. A. Chaptal, has very justly observed, that if we may be permitted to recur, by an effort of the imagination, to that epocha in which, according to some historians, the water and earth were confounded, and the confused mixture of all principles formed a chaos, we shall see that the laws of gravity inherent in matter, must have carried it down, and necessarily produced the arrangement which observation at present exhibits to us. The water, as the least heavy, must have purified itself, and arisen to the surface by a filtration through the other materials: while the earthy principles must have precipitated, and formed a mud, in which all the elements of stones were confounded. In this very natural order of things, the general law of affinities, which continually tends to bring together all analagous parts, must have exerted itself with its whole activity upon the principles of this almost fluid paste; and the result must have been, a number of bodies of a more definite kind, in crystals more or less regular: and from this muddy substance, in which the principles of the stones were confounded, a rock must have been produced, containing the elementary stones all in possession of their distinct forms and characters. In this manner it is, that we observe salts of very different kinds develope themselves in waters which hold them in solution; and in this manner it still happens, that crystals of spar and gypsum are found in clays which contain their component parts. If all the metals, stone earths, and alkalis were completely dissolved, the principles of the atmosphere condensed, and all blended together in oue great receptacle; and let this be encircled around by a large canopy, so constructed as to confine the volatile principles contained in this huge mass: then cause it to be acted upon by the same degree of heat as that with which the earth was first enlivened;—we might then form, perhaps, a correct idea of the original state of our

globe. If such an experiment could be fairly made, there would be, in all probability, a similar atmosphere formed, and a like combination of opposite qualities to what we now observe in the earth—each, according to its gravity, would incline towards the centre of attraction. Carbon, nitrogen, and oxygen, together with many other volatile matters, would rise, combine and form the atmosphere: those which oppose a greater resistance to the action of heat, by the superior force of their affinities, would gradually become united with different principles, according as they might chance to fall together, and arrest each other's progress towards the centre. The affinities between the elements of some of the less heavy principles of the fluid mass, being exercised with more activity than those of the more denser matters, the former uniting first, must bear obstacle to the progress of the latter towards the centre; and by this means, be retained near the surface—such as the ponderous stones and various minerals which are found on the surface of the globe. For some wise purpose, a considerable portion of our earth was to assume certain forms, viz: a large part of the globe was to be animated, and to receive locomotive powers, such as the astonishing variety in the vegetable and animal kingdoms—for their analyses sufficiently show, that they are diffused over the whole surface of the earth; and it must be on account of an original stamp, given by God himself, that the vegetable and animal world are united and moulded as it were, in the various shapes and grades presented to our view. The earth contains principles alternately mingled, detached, and consolidated; composition and decomposition agitate it continually, for its surface seems to be in continued vibration. This seems necessary to the fulfilment of the great end in view, viz: the preservation of the different species to a certain period.

If the human race could have resisted all the causes which tend to induce death, their demands would have been rapidly increased; and as man bears universal sway upon the earth, the vegetable and animal world would have been employed for his support, and by this means become extinct, and leave no other animated beings upon the globe except the human family, who under these circumstances, would be compelled, like the fish of the sea, to devour each other. Had this been the case, there would have been a very inconsiderable remnant of the earth left; and that a simple nodule or sphere of attraction, which in the present state of things might serve to keep the general mass suitably compacted. If all organic matter, both animal and vegetable, since the formation of our earth, could be brought together, it would form a mass that would fill creation; for it is the opinion of Spallanzani and others, that a single herring, if suffered to spawn and multiply unmolested, and undiminished for twenty years, would show a progeny larger in bulk than the globe itself. Philosophers and geologists have examined the earth, its furniture, magnitude, form, construction and astonishing magnificence, the various phenomena and kind of beings which inhabit it. The various mountains, hills, rocks, vallies, rivers and seas—what a field they must have had for speculation! They have also explained the exquisite workmanship of organized matter, and the laws by which it is governed. The earth is the third planet in the solar system, and revolves round the sun, as a centre of her motion from east to west, in 365 days, 6 hours and 9 minutes. Her distance from the sun is said to be 95 millions of miles, and moves at the rate of 68 thousand miles every hour, in her orbit. Independent of this annual motion round the sun, she turns on her axis; that is, she turns over once in 24 hours, which seems to produce motion in all the heavenly bodies from east to west. In consequence of the earth's motion on her axis, and round the sun, her inhabitants enjoy a succession of day and night, and also the different seasons of the year. The earth moves one degree in her orbit every day, a sign every month, and finishes her period round the sun, in 365 days, 6 hours and 9 minutes, which is called her year. The four seasons, spring, summer, autumn and winter, are produced by the inclination of the earth's axis to the axis of the ecliptic, which makes an angle of 23° 28′. The diameter of the earth, in round numbers, is said to be 8,000 miles, and although globular, her form is not exactly round, but an oblate spheroidal, flattened at the poles, and projected towards the equator, so that a line drawn through the east and west points is longer than one drawn through the north and south points.

GALEN.

PROGRESS OF IMPROVEMENT BY MARLING.

To the Editor of the Farmers' Register.

Agriculture, like other systems, is subject to occasional revolutions. Daily experience unfolds to us some new agricultural resource; and while some systems of agricultural improvement, ushered into notice by the most extravagant encomiums, have passed into a speedy and well merited oblivion, others have been discovered, that shall stand the test of time, and benefit millions yet unborn. A bountiful Providence has abundantly supplied the tidewater district of Virginia with calcareous earths, possessing invaluable properties, which were for a long time overlooked, or considered as possessing feeble claims upon our attention. But by analyses and industry their valuable properties have been discovered, and their beneficial qualities made evident. But a few years ago, I left James river, the place of my nativity and of my earliest affections, in a very deplorable condition. The deteriorated condition of the neighboring farms, the poverty stricken fields, naturally not fertile, but rendered poorer by a wretched system of cultivation, all bespoke a miserable condition of things that cried aloud for improvement. The product from cultivation would barely compensate the most industrious farmer. This was calculated to depress and overrate the energies of the people; and many a practical farmer found his income inadequate to his annual expenses. This depressed condition of things, induced many a noble hearted Virginian to forsake the graves of his fathers, and seek an asylum in some more genial clime, where the fertile earth would repay the labor of cultivation. But a great and surprising improvement has been accomplished in a few years by the renovating effects of calcareous manures, (wherever they have been used.) The spirit of industry and improvement have sprung again into life, and the physical energies of the people seem to be endued with a new impulse. The altered face of the country in my native district is remarkable: where the "hen's-nest grass"

grew in scanty pittance, I have discovered a luxuriant growth of clover, and more luxuriant corn. It is not for me, merely from observation, to describe the increased value, fertility and product of land in this section of the country. The effect is evident; nor is the cause occult. This discovery cannot be too highly appreciated by the agricultural community. From what has been accomplished, may we not promise ourselves that at some distant day, here agriculture may be seen flourishing in her prime, and the earth yielding her most abundant crop? In conclusion, I must say to you and your correspondents, go on in the laudable effort you have undertaken; rouse the energies, and support the interest of agriculture: let the Register become the depository of useful knowledge, from which may be abstracted a proper system of husbandry. This may be done by the combined efforts of the farmers of Virginia, and selections from other journals; and a nation's gratitude shall be your reward.

R. H.

ON GRAFTING FRUIT TREES.

To the Editor of the Farmers' Register.

"*Nec modus inserere atque oculos imponere simplex.*"

Though a mere tyro in the various and numerous departments of agriculture, I have ventured to place at your disposal, a few suggestions on the mode of grafting fruit trees. It is performed seven or eight different ways; a just idea of which may be sufficient at first; and I may reserve for the practical part, a particular detail of each precaution necessary to be observed.

The most ancient manner of grafting is performed, first, by lopping off all the head of a tree, or only one of its main branches; secondly, by cleaving the stock with a strong knife, which might be driven in with a mallet; thirdly, by opening the cleft to some depth by means of a wedge; and lastly, by inserting into the stock, a branch cut from a tree of a kindly nature, and impregnated with at least three good buds, which are so many knots or tumors, each of which enfolds a little packet of leaves. The extremity of the graft should be cut smooth and even on both sides; after which, it ought to be placed in the cleft, in such a manner, that the bark of one of its sides, at least, may exactly coincide with the bark of the stock that receives it. This disposition is absolutely necessary, because the incorporation of the graft with the stock, is accomplished by the mutual union of their fine barks. This bark is composed of several thin rinds, or films, drawn in circles over each other; and the first round is disengaged from the rest, at which time it swells into a more substantial texture, and forms the new circle of wood, or *alburnum*, which is annually acquired by the tree. The fibres that constitute the inward rind of the fine bark, are cut in those parts where the stock and stem are joined, the orifices of the one, opening into those of the other; in consequence of which, the callous substance which is there formed, unites several canals of the trunk, with those of the graft. Other canals are interwoven with each other, and the two films, so different in their natures, are consolidated into one substance. But when this conjunction is not accomplished under the fine texture of rind, it must never be expected, either in the wood already formed, and which then ceases to be supple, or in the gross bark, which is altogether as unpliant as the wood. When the insertion is completed, it should be covered with chips of bark, in such a manner as to exclude all penetrations from without. This covering of bark should be coated over with a composition of wax and pitch melted together; or a mixture of clay with a small quantity of straw; and the whole should be swathed over with cloth, to prevent the admission of rains and parching air. This is called grafting in a cleft.

The first cleft may be crossed by a second, in order to insert four scions instead of one, but care must be taken to unite the bark of the scion, with that of the stock. This is called cross-grafting, but the *modus operandi* is the same as the other.

If the trunk be too thick, so as to create just apprehensions of its being too much shocked by opening a cleft, the surrounding bark must then be separated from the wood in several parts, by the insertion of a small wedge; after which, we may sink into the opened circumference eight or ten grafts, each of which should have four or five good buds, and their extremities are to be shaped or flatted in such a manner, as will best adapt them to their several apertures. The whole must be covered over like the grafting cleft, and this is called grafting in the rhind.

Sometimes instead of inserting the scions into a cleft, or between the wood and bark of large stocks, an incision of some depth is made with a joiner's chisel into the bark, and likewise in the wood; and when the piece is taken out, the end of the graft must be exactly adjusted to the cavity, by which means the two barks acquire an intimate conjunction; and this is called whip-grafting.

The fifth manner of grafting is more generally practised upon stone fruits; and this operation is performed by cutting from a good tree, a small triangular piece of the bark, whose length must a little exceed its breadth, and in the middle of which, the first appearance of a branch, with the traces of one or two buds should be seen. In paring off this bark, it is usual to slide the blade of the pruning-knife under it, in order to cut the little knot, if that should be necessary, together with a small quantity of the wood; not that this last can be of any advantage in causing the graft to take; but this precaution is used to prevent any hazard of missing the knot, and we may be certain it is secure, when it adheres to the bark, but if it should be separated from it, no bud will be found. This knot is the whole future tree *in parvo*. The person employed in this operation, holds the triangular bark in his mouth, by the extremity of the little branch, to prevent the saliva from being detrimental to the sap; and at the same instant, makes an incision in the form of a T, in some smooth part of the wild stock or tree, that is to be meliorated; after which he raises and removes the lips of the upper aperture, and then slips in the triangular bark, causing its longest point to descend till it arrives at the bottom of the T, and is covered in every part, except the bud, which is suffered to project outward. Some persons, I believe, have made successful attempts to inoculate in another manner: They apply the triangular bark of a kindly nature, to the bark of a wild stock, and cut in this latter, another triangular plug of the same dimensions with the other; after which they raise

it up, and remove it from its place, and then insert the other bark, which contains the eye or branch of the better species. The barks are gently treated, and qualified for uniting with each other, by binding them with several rounds of woollen thread, and then the whole is completed. Woollen is preferable to hempen thread, which is too inflexible, and prevents the bark from dilating with due freedom If the inoculation be performed in the summer season, when the tree is impregnated with a copious sap, it is customary to cut off the head of the wild stock, four or five fingers above the place of inoculation, that the sap may flow over it, and promote its proper operation: This small remainder of the wild stock is likewise left above to prevent the sap from suffocating the graft. This is denominated shoot-grafting.

When the inoculation is deferred to the month of August, or the autumnal season, it may then be improper to accelerate the graft, and therefore, it is permitted to be dormant, or at least to act in a languid manner; in order to effect which the head of the tree is not lopped off till the succeeding spring, when the sap will be renovated, and give indications of life. This practice has the appellation of the dormant graft, and the *modus operandi* is the same as that described above.

The last I shall mention is root-graftings, which is performed by grafting a fine fruitful branch upon a stock of roots, to effect which one of the large roots of a tree is chosen, whose nature corresponds with that from whence the graft is to be taken. The root is cut into several divisions, in each of which a graft is inserted, agreeably to some of the preceding *formulæ*. When a tree happens to be vigorous, you may take from it a root large enough to furnish twenty or thirty stocks; and if the practice of root-grafting were authorized by sufficient experiments, and had been advanced to a certainty of success, we might at once plant a root, and its graft in the place where the tree itself should grow; whereas, in all the former operations, there is generally a long interval of time between grafting and transplanting. A tree may likewise be grafted on its stock, in conformity with some of the methods already represented, and when one of its branches has been inserted into its trunk, you may likewise graft one of its shoots upon that branch, and the fruit is supposed to acquire a finer degree of delicacy, though I am unable to account for the cause.

It is not sufficient to understand the art of grafting, and to be capable of adapting the most proper method to each plant. The article of the *greatest* importance, is to know what stock is most agreeable to each graft; but the whole may be referred to very simple principles. Pears are grafted either on stocks of their own kind, which are termed free-stocks, or on a quince tree. Those grafts that are intended to be fully exposed to the wind, should be inserted into a vigorous stock, which by penetrating very deep into the direct soil, secures its roots from being injured by the drought that reigns about the surface.

Those shoots that are to be formed into dwarf trees, or espaliers, ought to be grafted on a quince tree, which shoots to a moderate depth of earth, and slides its roots between two strata of soil; it also delights in a cultivated ground, bears in a short space of time, and produces better fruit than a scion grafted on a free stock, unless it be very old.

Apples are grafted on a crab-tree, raised from a slip or kernel, and likewise on a codlin or paradise stock. The crab-tree that has been raised from a kernel, is a slow plant, but very vigorous, and it lives for a considerable time. It is also employed in the production of standard pear-trees. The paradise stock shoots out but a few roots and a small quantity of wood; it is soon fruitful, but not of any long duration; it is likewise formed into dwarf trees, in those places where the view ought not to be intercepted. The codlin tree is a just medium between these two, with respect to its height and duration; but is more proper to be shaped into a fine dwarf tree. Grafted apple trees succeed in soils that are but indifferent, and where the pear tree would languish for want of humidity.

Cherry trees may be grafted on stocks of the black or wild red cherries. They are commonly inoculated, and before midsummer.

All kinds of plumbs are propagated either by cleft grafting or inoculation, on wild plumb-stocks raised from slips, or the stones of that fruit. Apricots and peaches are inoculated on an almond, plumb tree, and peach tree. The roots of the first, shoot very deep into the earth, but those of the plumb tree never descend much below the surface; and they extend in horizontal lines: The grafts thereof are inserted into almond trees, in soils that are naturally dry and parching, and where the roots of the plumb tree would be destroyed by the drought; whereas in moist lands, where the water rises near the surface of the earth, the peach and apricot are generally grafted on a plumb stock, because the roots of the almond tree would, by shooting to their usual depth, plunge into the water, which would certainly rot them.

These are the principles of the art of grafting; but the diversity of soils, positions and air, in conjunction with the knowledge and experience of each person may authorize many exceptions in the practical part. As to any other particulars, the generality of these methods are easily put in execution, and their success is almost infallible: But as simple as these several operations may be in themselves, nothing can be more astonishing than the effects they produce, "not that I am for raising a branching head of apples on a plane tree, or causing a chesnut stock to intermix a vegetation of beech mast, with his own fruit."

CLAYTON G. COLEMAN.

Roxbury, New-Kent, Jan. 18th, 1834.

REMARKS AND QUERIES ON MR. OLD'S MODE OF CULTIVATING TOBACCO.

To the Editor of the Farmers' Register.

Warren County, (N. C.) Jan. 16th, 1834.

I have recently become a subscriber to the Farmers' Register, and examined the numbers received—the instructive matter, convenient form, and neat mechanical execution of which, all claim my highest commendation. Indeed, sir, I congratulate myself, and the agricultural public on the acquisition of a work conducted by a gentleman, who brings to the discharge of the important duty he has assumed, a mind enlightened by scientific research, and practical experience, and directed by a zealous devotion to the best interests of his patrons. Such a publication, suited to the moral and physical condition of the country, has been

long a desideratum in Virginia; and your position, near the head of tide-water, and the line dividing the planting and grain growing districts of the state, is believed to be peculiarly favorable to its successful prosecution. The times, too, are propitious to such an undertaking. High prices, and facilities of transportation, stimulating to increased production, have awakened a spirit of improvement; and the minds of many, hitherto indifferent to the subject, are now directed to the resuscitation of their exhausted fields. On the Register devolves the pleasing task of taking that spirit "at the flood," and leading it "on to fortune"—and a chastened ambition could desire no higher distinction than that, which will be awarded to its editor, by a grateful posterity. I avail myself of your columns, to propound a few queries, designed to elicit further information relative to the system of tobacco planting, so successfully practised by Mr. Wm. Old, of Powhatan. The communication of your correspondent, Mr. Meade, (No. 7, page 441, Farm. Reg.) is entirely satisfactory as to results—but does not enter sufficiently into the details of culture and management, for the instruction of distant readers, who can have no advantages of personal observation. He says, "Mr. Old has two lots for tobacco, one of which is planted every year, followed the next spring with oats, which, when ripe, are rolled down, or turned under with the plough, as he thinks best."

I would respectfully ask—What circumstances vary his management, and determine him to roll, or to plough? When he rolls down the oats, at what period, thereafter, he turns them under? Whether his preparation for planting, in the spring, be materially different from what is common? What is the character of his soil? What kind of tobacco he plants—and whether he primes and tops high?

I have a deep interest in this subject, which will, I trust, form a sufficient apology, for the trouble I shall give you in reading, and making such disposition of this note, as you, in your discretion, may think most likely, to reach the object contemplated.

Mr. Meade is entitled to the thanks of the tobacco planting community, and will please accept mine, for his highly interesting paper. It points to a system, which, if judiciously carried out into practice, must lead to the accomplishment of the three cardinal objects of agricultural labor in all countries—increase of market crop, abundance of bread stuffs, and improvement of the soil.

Living in retirement, without ambition, or motive to lift its veil, and asking information, only with a view to my own, and my neighbors' benefit, I cannot yield to, though I feel the force of your suggestion, that all communications should appear over the proper signatures of their writers. You will, therefore, omit my name, should you think proper to insert this in the Register.

Retaining a pleasing recollection of our early acquaintance, I pray you, sir, to accept my best wishes for the success of your labor in the great enterprise in which you have embarked, for the advancement of agricultural science.

[We hope that an answer to the foregoing queries, will be furnished by any one of the gentlemen referred to.]

For the Farmers' Register.

PLAIN DIRECTIONS FOR ANALYZING MARL, AND OTHER CALCAREOUS MANURES.

It is of the utmost importance to every farmer who is using calcareous manures, to be able to know their value by chemical tests—and though sufficient practical knowledge for this purpose may easily be acquired, and cheaply exercised, there are very few who do not seem to think the subject so mysterious, or so difficult, as to be entirely beyond their reach. This opinion is altogether erroneous. Any person, with a little attentionand care, though quite ignorant of chemistry, may test the value of his marl, or beds of fossil shells, with enough accuracy for all practical purposes. The following directions are offered for this purpose: and it will be my object to make them so plain, that any person may understand them, and follow them with success in practice. For want of this knowledge, many persons are now using rich calcareous manures so lavishly as to injure the lands which they ought to improve: and for the same reason, many bodies of calcareous earth, or stone, remain useless, and their value as manure unsuspected, because their form and appearance differ from other substances heretofore used for that purpose.

The immense beds of fossil shells which lie under the greater part, if not the whole tide-water region of Virginia and the adjacent States, furnish the manures for which the process of analyzing is most generally needed. But the same methods will serve for any other form in which calcareous earth may be presented, or suspected to be present—as in soft and impure limestone, calcareous tufa, argillaceous marl, &c. Much interest has of late been excited on this subject, and many persons have been searching for calcareous earths. To know whether any earth is calcareous, nothing more is required than to throw a little of it into muriatic acid diluted with water, when effervescence will at once mark the presence of calcareous earth. The existence of that ingredient being known, its proportions may be ascertained in the following manner:

1st. Take a lump of marl, fossil shells, &c. large enough to furnish a fair sample of the particular body under consideration—dry it perfectly, near the fire—pound the whole to a coarse powder (in a metal mortar,) and mix the whole together—take from the mixture a small sample, which reduce to a finely divided state, and weigh of it a certain portion, say 50 grains, for trial.

2nd. To this known quantity in a glass, pour slowly and at different times, muriatic acid diluted with three or four times its bulk of water, (any except lime stone, or *hard* water.—) The acid will dissolve all the lime in the calcareous earth, and let loose the carbonic acid with which it was previously combined, in the form of *gas*, or air, which causes the effervescence, which so plainly marks the progress of such solution. The addition of the muriatic acid, must be continued as long as it produces effervescence; and but very little after that effect has ceased. The mixture should be well and often stirred, and should have enough excess of acid to be sour after standing thirty or forty minutes. (So much of the acid as the lime combines with, loses its sour taste, as well as its other peculiar qualities.)

3rd. The mixture now consists of 1. the lime combined chemically with muriatic acid, forming *muriate of lime*, which is a *salt*, and which is dissolved in the water—2. a small excess of muriatic acid, mixed with the fluid—and 3. the sand, clay and any other insoluble parts of the sample of marl. To separate the solid from the fluid and soluble parts, is the next step required.

Take a piece of filtering or blotting paper, about six or eight inches square, (some spongy and unsized newspapers serve well,) fold it so as to fit within a glass funnel, which will act better if its inner surface is fluted. Pour water first into the filter, so as to see whether it is free from any hole, or defect—if the filtering paper operates well, throw out the water, and pour into it the whole mixture. The fluid will slowly pass through into a glass under the funnel, leaving on the filter all the solid parts, on which, water must be poured once or twice, so as to wash out, and convey to the solution, every remaining particle of the dissolved lime.

4th. The solid matter left, after being thus washed, must be taken out of the funnel on the paper, and carefully and thoroughly dried—then scraped off the paper and weighed. The weight, say 27 grains, being deducted from the original quantity, 50, would make the part dissolved (50—27=23,) $\frac{46}{100}$ of the whole. And such may be taken as very nearly the proportion of calcareous earth (or carbonate of lime) in the compound examined. But as there will necessarily be some loss in the process, and every grain taken from the solid parts, appears in the result as a grain added to the carbonate of lime, it will be right in such partial trials to allow about 2 per cent. for loss, which allowance will reduce the foregoing statement to $\frac{44}{100}$ of carbonate of lime.

5th. But it is not necessary to rely altogether on the estimate obtained by subtraction, as it may be proved by comparison with the next step of the process. Into the solution (and the washings) which passed through the filter, pour gradually a solution of *carbonate of potash*, (salts of tartar.) The first effect of the alkaline substance thus added, will be to take up any excess of muriatic acid in the fluid—and next, to precipitate the lime (now converted again to carbonate of lime,) in a thick curd-like form. When the precipitation is ended, and the fluid retains a strong taste of the carbonate of potash, (showing it to remain in excess,) the whole must be poured on another filtering paper, and (as before,) the solid matter repeatedly washed by pouring on water, then dried, scraped off, and weighed. This will be the actual proportion of the calcareous part of the sample, except, perhaps a loss of one or two grains in the hundred. The loss, therefore, in this part of the process apparently lessens, as the loss in the earlier part increases the statement of the strength of the manure. The whole may be supposed to stand thus—

27 grains of sand and clay.
21 —— of carbonate of lime.
2 —— of loss.
—
50

If the loss be divided between the carbonate of lime and the other worthless parts of the manure, it will make the proportions 28 and 22, which will be probably near the actual proportions.

The foregoing method is not the most exact, but is sufficiently so, for practical use. All the errors to which it is liable, will not much affect the reported result—unless magnesia is present, and that is not often in manures of this nature. Magnesia is never found (I believe,) in the collections of fossil shells—nor have I known of its presence in any of the earthy manures except limestone, and the magnesian marl lately discovered in Hanover. If any considerable proportion of carbonate of magnesia should be present in marl tried by the foregoing method, it may be suspected by the effervescence being very slow, compared to that of carbonate of lime alone: and the proportions of these two earths may be ascertained as follows. The magnesia as well as the lime would be dissolved by the muriatic acid (applied as above directed)—but the magnesia would not be precipitated with the carbonate of lime, but would remain dissolved in the alkaline solution, last separated by filtering. If this liquor is poured into a Florence flask, and boiled for a quarter of an hour, the carbonate of magnesia will fall to the bottom, and may then be separated by filtering and washing, and its quantity ascertained, by being dried and weighed. This part of the process may be easily added to the foregoing—but it will very rarely be required. An iron or brass mortar and pestle, small scales and weights, a glass funnel and flask, and a few sheets of filtering paper, are the only apparatus wanting for this process—and muriatic acid, and carbonate of potash, the only tests—all of which may be procured at any apothecary's shop.

If a glass pneumatic apparatus, such as is described in Davy's Agricultural Chemistry, is used to measure the carbonic acid gas evolved, the proportion of carbonate of lime may be fixed with much more precision, and in much less time. But it is unnecessary to offer a description of that process, which could not be made plain without a plate, and to which it is probable but few farmers would resort, on account of the expense of the apparatus. E. R.

VIGOROUS AND LUXURIANT GROWTH OF GAMA GRASS IN DINWIDDIE COUNTY.

[The facts stated in the following letter are worth especial notice, not only on account of the high respectability of the writer, and his habits of observation as a farmer, but because he is certainly not misled by any partiality for this grass, which so much has been said in favor of by others. Still, we do not understand Mr. Grammer as offering a decisive opinion, as to the inferior quality of the hay, except when it had been mowed too late: and as to the hardiness of the grass, and its power of living on soils of very unfavorable qualities, the testimony furnished by his experience, is satisfactory and ample. The seeds which were sent for examination, left no doubt as to the "corn grass," and Gama grass being identical.]

To the Editor of the Farmers' Register.

Dinwiddie, Feb. 5, 1834.

While I am writing, permit me to say a few words in regard to Gama grass; about which you have published several notices, and which seems to be exciting much interest in the farming community. I see by the last Register, some one of your correspondents is very desirous of procuring seed to plant three or four acres, and I learned from

other sources, that the seed are in very great demand. Had I foreseen this last August, I could have made more from this article, than I did from my wheat crop; for this grass grows most abundantly on my plantation, and some others in this neighborhood, and has been known here, from time immemorial, under the name of *corn grass*. Now, sir, I have very little doubt, but that it may be produced from the roots as successfully as from the seed; and with this advantage, that the roots can be set out this spring, while the seed cannot be procured to any extent, until next fall. Would it not be well then, to suggest to those who wish to cultivate it, the propriety of trying an experiment with the roots? A wagon load of the roots, would plant, I suppose, two or three acres of land: and I would most cheerfully, yea thankfully, permit any one to grub up a wagon load, and as many more as he chose. Do not think however, from my anxiety to get rid of it, that I am disposed to ridicule the efforts which many are making to raise it. I think it very probable the gama grass may prove valuable to many persons, although it is not so to me. My land is a stiff "pipe clay," particularly adapted to the growth of grass, and I might, in most years, make much more hay, than I have time or force to take care of. My meadow yields an abundance for my own consumption, and as I have no market for it, I of course, have no inducement to pay more attention to raising grasses. And my objections to the gama grass are, that it is much inferior in quality to other grasses, that grow here spontaneously; that it prevents their growth wherever it gets possession; that its roots are so strong, and mat together in such bunches, as to render it impossible to break them with any other implement than a grubbing hoe; and that it exhausts the soil. It forms a large proportion of the hay that I cure annually, being mixed with the other grasses through the meadow; but my horses, while they are very fond of other hay, invariably reject the blades of gama grass. But this objection may not operate under a system of management different from mine. It is generally late before I can commence mowing, so that the gama grass has reached its maturity and is very coarse: could it be cut early in June, it would probably make very good hay: and it certainly yields a more abundant crop of blades than any other grass, with which I am acquainted. In addition to this advantage, it seems to possess some others, calculated to recommend it to the attention of those whose land is not naturally productive in grasses. It grows here in every soil and situation, with the exception of marshy ground. There are some places in my meadow, on which the water stands two thirds of the year, and which are too wet for herdsgrass, and there are some spots which produce herdsgrass abundantly, although quite moist, but the gama grass is never found in either of these places; every where else it grows kindly; over the drier parts of the meadow—on the rising ground around the meadow—along the hedge rows—in the corners of the fences—by the side of foot paths—on the margin of branches—among broom straw and hen's-nest grass—on clayey hill sides, and in light soft bottoms, that have been formed by depositions. It appears too, to be less affected by drought than any other grass; but this I ascribe to the thick, bunchy form in which it grows; the upper blades skreening the lower ones from the rays of the sun. I am induced, however, (by the fact, that I have never seen it, but in enclosed fields which are never grazed in the spring or summer,) to doubt whether it will bear frequent cutting or grazing; but I have no hesitation in saying, that an acre of land well set in gama grass, will, from one mowing, yield greatly more, than the same ground would in any other grass, that I am acquainted with. For these reasons, I am anxious to see a full experiment made with it, and sincerely hope it may prove valuable. Although therefore, not inclined to keep it myself, I am honestly desirous to assist any one who is willing to try it. I will enclose you a few seed, which I picked from some dead stalks, that you may determine whether our corn grass, is really the gama grass.

With sincere respect, yours, &c.

JOHN GRAMMER, JR.

P. S.—Feb. 12th. I have been waiting for a week for an opportunity to send the enclosed. In the meantime, Mr. Wm. H. McFarland, has spent two or three days with me. He had procured from some friend, a few seeds of gama grass, and has removed all doubt of its being the same thing with our corn grass. In his walks, he gathered from the dead stalks and collected about my hay stacks, a quart of the seed; which with some roots he took up, will be sufficient for the experiment he wishes to make. If you see him, he can give you a more particular account of its appearance and habits here, that I can by letter; and he will confirm my statement, that it is to be found in every variety of soil and situation which my plantation affords, except on marshy ground. He saw it standing on galled ridges and in the bottom of gullies.

Yours, &c. J. G. JR.

IMPORTATION OF HORSES AND CATTLE.

To the Editor of the Farmers' Register.

Sir,—As many instances are occurring of blooded horses being imported from Great Britain; and much difficulty having been experienced, and heavy expenses incurred in their transportation, I would beg to address you on the subject of a plan, that will, perhaps, obviate the difficulties that have been experienced.

These difficulties have principally arisen from the want of a proper selection of place and time for embarkation; more especially from the want of taking advantage of the southern, or trade wind passage in the fall and winter season. Thus, have I recently known two horses, purchased out of one of the most celebrated studs in Great Britain, actually put on board a merchant ship, and hoisted into her long boat. And what was the consequence? This vessel took the northern route, and after a stormy passage of sixty-eight days, arrived in the United States with but one of these valuable animals. The other died on the passage. Its companion, having as many lives as a cat, as much strength as Hercules, and as good an appetite as any alderman, was safely landed, and will, I hope, long live to benefit her owner, and add to the value of the horse stock of the United States.

The more immediate object of this address, is to request that the editor of the N. E. Farmer, and any other agricultural paper, will take proper notice of this subject, with a view to ascertain whe-

ther our northern brethren, who have been so long in the habit of conveying stock to the West Indies, are not the proper person, to undertake their conveyance; and, also to ascertain whether they cannot be insured, as is (I believe,) the stock shipped to the West Indies, and at a moderate, as well as adequate premium? For the English underwriters asked fifteen guineas per cent. and the ship owners demand from $480 (£100,) to $720 (£150) for their freight; and, this a writer in the Turf Register says, is to Quebec.

The summer is the season for their transportation, and I should think that a vessel or two from Connecticut, might be employed in bringing out, not only horses, but cattle, &c. A bounty is, I believe, given in Massachusetts, sufficient to repay a ship master for his trouble, and stimulate him to exert himself in taking care of them. The facilities of travel are now such, that it is of little difference where, in the United States they are landed. For the south, the Chesapeake is the place.

SHELLY.

A REMARKABLE TREE.

To the Editor of the Farmer's Register.

Rockbridge, Feb. 7th, 1834.

Sir,—A hickory tree has been cut down in this county, not far from Lexington, a few weeks ago, which I think a remarkable one. It is of that species, which among us is called the black hickory; a species of tree which does not usually grow very large. It is of the wood of this species of tree, that the axletrees for wagons and other carriages are universally made, and it is thought to be a good sized tree, whose but cut will make four axletrees. Observe that this is not the shell, or scaly bark hickory, that often grows to a large size. The tree which I have mentioned in the beginning of this letter, is perfectly sound; the first or but cut measured three feet in diameter; and upon counting the growths, it was found to be upwards of two hundred years old. Some say, two hundred and twelve; the lowest count, I think, was two hundred and three. The farmer, on whose land it was cut, has delivered two logs of the tree, to a Windsor chair maker, in Lexington—the first log was thirteen feet long, and the next fourteen feet, and there is one log yet to be delivered, which is to be fifteen feet long—so that this venerable tenant of the forest will furnish forty-two feet of sound timber. It retained its thickness remarkably well. There may have been trees of this species as large, or larger, than the one I have mentioned, but I have never seen them.

SYLVA.

CANADA THISTLE.

[The agricultural publications of the northern states, frequently speak of the Canada thistle, a most troublesome intruder on their soil, which is slowly but steadily pursuing its (heretofore) resistless course from north to south. So formidable an enemy to the farmer is this little plant, that nothing short of legislative aid, and penal regulations, will arrest its progress—and a petition is now in circulation in New-York, which proceeded from the agricultural society of Monroe county (N. Y.) containing the following passage. "We also pray your honorable body to pass a law, with such provisions as you shall in your wisdom deem most efficient to subdue and extirpate the *Canada Thistle*, which is gradually propagating itself by its winged seed, and in a few years, will become a growing and grievous nuisance to the tillage of our land."

This invader is yet hundreds of miles distant from the borders of Virginia. Yet, unless our brother farmers of New-York, by new and effectual measures can destroy the foe, while it is within their territory, and thus guard us from the danger, we shall certainly at some future time suffer all the evils which are now felt in the north—and woe to the farmers of Virginia, if a single plant should here ripen and spread its seed. The soil of the whole commonwealth might be stocked with these plants, before any aid from the government to agriculture could be expected, for this, or for any other object.

The following extract will give some account of this pestilent plant, which will perhaps in time be but too well known to many among us who have yet scarcely heard its name.]

From the Genesee Farmer.

Farmers, you have had some days in which little out door labor could be advantageously performed; and I wish to ask, as the year is drawing to a close, whether you have examined your book of profit and loss, receipts and expenditures for 1833. It is possible some one may say they have not, as they keep no such book, and for a farmer such nicety is unnecessary. Not so, friend; the farmer who has not the means of knowing, and does not know, whether he is becoming yearly richer or poorer, is in a bad way; and acts as unwisely as would the merchant who should undertake, in his multifarious dealings, to dispense with day book and leger. You will derive advantage enough in one way to compensate you ten times for the trouble of making such entries. In looking over your expenditures, you will see many useless purchases, and by having the inutility of spending money in this way, frequently brought before you, you will be more on your guard in the future. But it is not to profit or loss in general that I wish at this time to call the attention of the farmer. I have been looking over your shoulder, (pardon the impertinence,) as you have turned over the pages of your journal, and have noticed, or seen places where they should have been noticed, a string of items of loss and expenditure like the following:

Imprimis.—Loss, by Canada thistles in lot, No. A.; growth so monstrous as to forbid the wheat that grew being gathered,	$10,00
Secundo.—Loss, by thistles in lot B, wheat checked in growth and injured in quality by being bound with green thistles,	10,00
Tertio.—Loss, by having ten hands, cradlers, reapers and binders, hindered at least one hour a day each, for five days, in picking thistles from their fingers,	4,00
Quarto.—Loss, by one pair of long calfskin gloves made to shield the hands and arms of the thrashing machine feeder,	1,50
Quinto.—Loss, by tearing strap, and breaking three cogs from cast iron horse power, in attempting to force a bundle of thistle stalks, unbound and tough, through the machine, hindrance and expense,	6,00
Sexto.—Loss, in not thrashing the wheat clean from the thistles, and rendering the straw worthless for stock,	5,00
Total,	$36,50

And all this loss by the article of Canada thistles alone, a serious sum for an ordinary farmer, and yet I do not think the sum is overrated; confident I am, I can name a dozen individuals, whose loss the past year has been greater from this cause than the amount specified above.

And now farmers of West New-York, are you willing that business should go on thus? Remember your experience with thistles is as yet but the beginning of sorrow. The work of exterminating the Canada thistle, must be set about vigorously and simultaneously, or we may bid adieu to all our family prosperity and greatness. I say simultaneously, for unless the attack is made in this way it will fail. It will avail me little or nothing to spend my time and money in ridding my farm of this pestilent weed, when my next neighbor raises bushels of the seed, and with every wind distributes it gratis far and near. We have so many farms occupied by men into whose souls no ray of public spirit ever entered, or if it did, was instantly quenched by the spirit of the bar, that nothing for the extermination of the thistle will ever be done except by compulsion, by legislative enactments, strongly drawn, and vigorously enforced.

A history of the progress of the Canada thistle like that of the cholera, would prove an interesting work. More than two hundred years since, a Catholic missionary sent it as a curious and beautiful plant from the banks of the St. Lawrence to a public garden at Paris, and from thence it has spread over Europe. * * * * * * * From Canada it has entered the United States, and is proceeding southward, if not rapidly, yet surely. Winds waft it, the traveller transports it in his hay, and it is distributed with various seeds particularly those of clover and grass. This latter fact speaks but poorly for the morality of the man who would perpetrate such an act, for it is no better than theft or highway robbery, yet men who claim to be respectable decent men, do this annually. We have been informed that the first Canada thistles seen in the county of Cayuga, sprung up by the road side, where a way-faring man had fed his team of horses. There is scarcely a department of domestic industry, where the evils of this weed are not felt; and it ill becomes a community possessing the proverbial enterprise and perseverance of American Farmers to sit down and fold up their arms in hopeless despondency, while so serious an inroad is making on their prosperity. Let those who have the thistle on their farms vigorously set about checking their spread, and if possible exterminate them—above all, let it be a settled axiom, never, under any circumstance, to allow a thistle to go to seed; let those who have none on their farms see that none get rooted there; nothing is easier than to eradicate them on their first appearance, but a patch of an acre, experience has proved, is an affair not to be sneezed at. Let legislative aid be asked, which we are confident would be readily granted, and in all proceedings with regard to the thistle let it be remembered, that half-way measures will avail nothing; it is the whole or none, all or nothing system which must be adopted, or there will be little success.

PLOUGHPOINT.

CONCENTRIC CIRCLES IN TREES.

From Silliman's Journal of Science.

In the year 1827, a large lot of hemlock timber was cut from the north-eastern slope of East Rock, near New Haven, for the purpose of forming a foundation for the wharf which bounds the basin of the Farmington Canal on the east. While inspecting and measuring that timber, at the time of its delivery, I took particular notice of the successive layers, each of which constitute a year's growth of the tree; and which, in that kind of wood, are very distinct. These layers were of various breadth, indicating a growth five or six times as full in some years as in others, preceding or following. Thus, *every tree has preserved a record of the seasons* for the whole of its growth, whether thirty years, or two hundred,—and what is worthy of observation, *every tree told the same story*. Thus, if you begun at the outer layer of two trees, one young and the other old, and counted back twenty years,—if the young tree indicated by a full layer, a growing season for that kind of timber, the older tree indicated the same.

My next observation was, that the growing seasons *clustered together*, and also the meager seasons came in companies. Thus, it was rare to find a meager season immediately preceding or following a season of good growth; but, if you commenced in a *cluster* of thin and meager layers, and proceeded on, it gradually enlarged and swelled to the maximum, after which a decrease began and went on, until it terminated in a minimum.

A third observation was, that there appeared nothing like *periodicity* in the return of the full years or the meager, but the *clusters* alternated at irregular intervals; neither could there be observed, in comparing *clusters*, any law by which the number of years was regulated.

LEGISLATION AND AGRICULTURE IN VIRGINIA.

To the Editor of the Farmers' Register.

February 15th, 1834.

In your 8th number, there is a communication signed T. B. McR., on the subject of "Encouragement of Agriculture by the Legislature of Virginia," which so well expresses, what I myself have long and deeply felt, that I cannot refrain from raising my feeble voice in praise of the author, and imploring our legislature, not only to meditate attentively on his suggestions; but *to act* upon them, before they return to give an account of their stewardship to their constituents. Can it be possible, Mr. Editor, that they will suffer *another* session to pass away, without the slightest effort whatever, to do any thing for the cause of agriculture in our beloved state,—of agriculture—that indispensable support of every public institution; that essential aliment of all the different trades, callings and professions, which exist in every well organized government;—that vital source of all national prosperity? Would to Heaven, that *every* man in the community, felt your correspondent's appeal, as a true patriot should do!—poor old Virginia would not much longer remain in the death-like sleep, that has paralyzed all her energies for so many long, wearisome and painful years of lethargy on her part; and I may add, almost of *despair*, on the part of her warmest and truest friends. She would call upon her public functionaries, in a voice that they durst not disobey, to abandon forever, all idle

and profitless contentions about political abstractions, with which no duty whatever calls upon them to intermeddle, and to apply themselves exclusively to the all-important—the vital object of restoring Virginia,—so far as depends upon them, to that position in our union, to which she is most justly entitled, and which she never would have lost, so far as she certainly has, but by the fatuitous ignorance, or criminal disloyalty, of those whose highest public duty it was to sustain it by statesman-like policy, and disinterested patriotism. That Virginia influence in our public councils, (I mean, of course, *legitimate influence,*) *has been lost*, none are now so blind as not to see; yet, most strange to say,—most hard to believe,—although the public vision is perfectly cleared up *as to the fact*, it seems still as muddy as ever, in relation both to the cause, and to all the most obvious means of recovery. Legislative aids to agriculture, or rather to husbandry, form the first;—legislative aids to general education and to internal improvements, of which education is immeasurably the most important of all, constitute the second of these means: and unless *they* are speedily adopted and judiciously applied,—our representatives may talk and talk of state-rights, nullification, presidential misrule, banks and federal relations, until they burst their lungs, without doing the smallest imaginable good to the people, whom they represent. Nay, they will do incalculable mischief by the latter course; for they will be aggravating the party madness, which is now raging through the country, like a canine rabies,—instead of rousing their fellow-citizens to every intellectual and moral exertion of which they are capable. The times, and the present, as well as prospective condition of our dear old state, most imperatively call for such exertion; and deep, and deadly, will be the guilt of those who neglect to make it. That it should take the direction indicated, seems to my humble judgment, as clear as the light of a cloudless meridian sun; for it is *agriculture* that furnishes the milk, which nurtures the children of the state;—it is *agriculture* that supplies the staff of life to her adult sons; and it is *education, education alone*, not abstract discussion and *party politics*, (the very name of which shows their partial, and consequently, unjust character,) which will enable these sons to understand—to value as they ought—and to defend their rights, from whatever quarter they may be assailed.

But my feelings, Mr. Editor, carry me away on this subject,—a subject brought most painfully to my mind, (although it is seldom out of it,) by every newspaper that I take up; and especially by the communication of your correspondent T. B. McR. Agreeing as we do, on so many points, I regret very much to differ from him on any. But there are two, in regard to which, I must, with due deference, express my dissent. The first, is a question of fact, about which I should sincerely rejoice to find him right; but my own experience is directly opposed to his. *He* says,—"there is in many places, increased attention to agricultural societies. New societies have been formed, and old ones which were long neglected, have been revived." Now I say, that I have not been so fortunate as to witness any thing like it, although I have been closely connected with such societies, ever since they were first established in Virginia. All the *old ones*—to the number of some fifteen or eighteen, are utterly defunct, if I am not greatly mistaken—one only excepted, and *that* is in a very languishing condition; while the *new ones*, as far as I have heard, amount to—*one*, somewhere beyond the Blue Ridge. That your correspondent fully believes what he has uttered, I have not the smallest doubt; but it would have cheered the drooping spirits of a brother agriculturist, more than can easily be expressed, if he had specified the cases upon which he rests his opinion. Again, he says;—"when Virginia awakes, it will be with the strength of a giant." Would to God he could prove a true prophet. But even giants themselves, if they remain drunk or asleep, for a quarter of a century or more, as Virginia has done, will be very little,—if at all stronger than ordinary men; although their guilt will be enormously aggravated by their neglect to exert, for the general good, the great superiority of power with which nature has endowed them.

Your correspondent, Mr. Editor, will pardon, I hope, these only instances of dissent from his opinions, in consideration of the entire approbation, which I avail myself of this opportunity to express, in regard to every thing else that he has said on a subject, which, in my humble judgment, is of infinitely more importance than any other, (the general education of the people always excepted,) that can possibly engage the attention of the Virginia Legislature.

As one of your subscribers and constant readers, permit me to express the earnest hope, that your correspondent T. B. McR., may frequently favor us with more of his agricultural politics; for should they suit the taste of your other readers, as well as they do mine, something from his pen in every number, would meet a most cordial welcome from us all; but from no one more than from

Your old friend, J. M. G.

CALCAREOUS DEPOSITES IN NORTH CAROLINA.

To the Editor of the Farmers' Register.

Mantua, Lenoir County, (N. C.)
Feb. 12th, 1834.

Dear Sir,—I avail myself of this opportunity, to thank you for the pleasure and instruction derived from a perusal of the "Essay on Calcareous Manures," with which you so kindly presented me, when we met at Raleigh. In my humble opinion, no single treatise which has yet been published, promises so much good to southern agriculture. It opens a new and extensive mine of fertility, for the lasting improvement of our impoverished soils; and may be the means of adding millions to the wealth and prosperity of the south. Happily illustrating an important theory by judicious and satisfactory experiments, this work comes directly home to the comprehension and interest of its readers.

My location is on the Neuse river, about midway between tide water, and the granite termination. Very little has yet been done towards the improvement of our plantations. Manure is preserved in but small quantities, and few aim at any thing higher than the *two-shift system*. Under this management, our lands would rapidly deteriorate, were it not for their warm and quick qualities, which enable them soon to recover from exhaustion. As it is, however, they are far from progressive improvement.

So far from it, that were I to say they go two steps backwards, and one forward, it would give you no unapt illustration of our agricultural advancement. Hopeless, indeed, would be our prospects, could we see no remedy to arrest this retrograde course. Fortunately there is a remedy ample, and all-sufficient, and which a kind providence has furnished at our doors; this remedy is nothing more nor less than marl. They who are sceptical as to the value of marl, or fossil shells, as a manure of the best and most lasting character, have only to consult the experience of Eastern Virginia, and the Eastern Shore of Maryland for the last seven years; and their doubts will be entirely removed.

The alluvial region of North Carolina, is extremely rich in shell and stone-marl. Although my acquaintance with the geology of this section of it is limited, I know of many extensive deposites of this valuable earth. There are two beds of it on the banks of the Neuse in Wayne county. One at Cox's ferry, a little below the first falls, and the other some miles lower down, on the plantation of James Griswold, Esq. These deposites, and particularly the latter, are rich and abundant.

Some twenty or thirty miles lower down, there are two more deposites disclosed on the banks of the river, and about three miles apart. As these belong to me, I have taken some pains to ascertain their value and extent. The lower bed contains $\frac{49}{100}$ of carbonate of lime, and the upper one $\frac{75}{100}$. The former has been pronounced by you, a very valuable manure, though not pure enough for lime, and the latter extremely and unusually rich. Either bed is capable of furnishing millions of bushels. The upper one has been pierced one and a half miles from the river.

There is another valuable quarry in Lenoir, several miles from the river.

Descending the Neuse into Craven county, deposites of marl are found much more frequent, until you reach Newbern, and I presume continue to the mouth of the river. I must not omit to mention here, that Lucas Benners, Esq. an enterprising and spirited farmer, residing on the river below Newbern, has been profitably marling his lands for several years. His example has so far been lost on the community.

Stone-marl is still more abundant on the Trent river, which you know unites with the Neuse at Newbern. There is a great deal of it on Neuse river, in Onslow county; and I have seen a rich bed of fossil shells, on the side of a ravine in Sampson county, near the Six Runs, a tributary of the north east branch of Cape Fear. In Duplin county, there are two streams, one called Little, and the other Big Limestone, on which I presume the article abounds. But it would be wasting time to go further into details. There can be no doubt, but that the whole alluvial section of our state is undermined by a stratum of fossil shells, sometimes approaching the surface, but generally lying so deep as to escape observation, except where it is disclosed by ravines and water courses.

Thus you will see we have the bane and antidote both before us. I trust we shall make a wise choice. Should we not however, it can excite no surprise. It will not be the first rich pearl we have cast away.

It is enough to make the heart of the patriot bleed, when he reflects what North Carolina is, and what she is capable of being. With every thing in the way of resources, physical and moral, to make her a great, commanding and prosperous state—she is at best but stationary, and which you know is comparative declension. Her population and wealth are deserting her in one continued and augmenting stream, for other climes. And why? Simply because she will not improve the means which the God of nature has placed at her disposal. Internal improvement is at present a more urgent want with us, than the improvement of our soils. Millions of our resources are lying dormant, for the want of facilities for transportation. Let me offer a single illustration, applicable exclusively to the eastern section of the state. The pine-trees (long leaf,) of North Carolina, for lumber and naval stores are unquestionably of greater value than her slaves, if they could be made available. I have been informed upon the best authority, that 20 per cent. can be cleared on the capital, embarked in making turpentine, when convenient to market. But for the want of this convenience, this immense resource can only be called into action on small portions of our navigable streams. I travelled a few days ago from Waynesborough to Fayetteville, a distance of sixty-five miles, through a country heavily timbered with the finest long leaf pines, and saw no evidence during the route of their being used for any thing but plantation purposes. I should except one tar kiln, and half a dozen trees designed for tar timber, partly hewn and left to decay—but not one stroke of the axe for turpentine. Hundreds and thousands of acres are in the state that nature formed them. This is but "*e pluribus unum*," to show you how profoundly the giant sleeps. But I am trespassing too much on your patience, and will force myself to a conclusion.

Yours, &c. ISAAC CROOM.

For the Farmers' Register.

ENQUIRY.—PLANTING CORN.

Caroline.

I have read the remarks of Mr. Bruce in No. 6 of the Farmers' Register, or horizontal ploughing or trenching, with much interest, as a portion of my land is broken, but fear that I do not fully understand the *modus operandi*. His description is no doubt, plain enough to those who have heard of, or seen this kind of trenching; perhaps I ought to plead a comprehension too dull to understand him.

He speaks of *drains* on the side of an imaginary hill, but does not describe the manner in which they are made, or the direction they run? Is not the number of drains according to the size of the hill-side? Could not you, or Mr. Bruce, accompany a more particular description, with a diagram and rules, that cannot be misunderstood?

For the benefit of one of your subscribers, who signs himself "A Young Farmer," in No. 8 of your Register, I will observe that in this neighborhood, a far more expeditious mode of planting corn is practised, than that he has adopted. A rope, the length of which is graduated according to the *force* of the farmer, is obtained, and rags about two inches wide, of some bright color, as red or blue, &c. are sewed on it, as far from each other as you wish your corn planted—sew the rags on, so that they can be slipped, if you desire

o diminish or increase the distance of your corn-ills. The ends of the rope must then be tied to wo sticks or poles, five or six feet long, and be arried by two of the hands: they stretch the rope, nd take their station in the furrow opened for the orn—your planters or droppers stand behind the *ine*, each one just opposite a rag—the corn is dropped and covered with the foot of the person who drops—the line-carriers then move to the next bed, and so on. To keep straight, have a pole stuck up some distance ahead, of one of the ine-carriers, and he can walk perfectly straight. This mode is very expeditious, and on level land, where it only answers, I will venture to say, that one hand will plant and cover twice as much, as he can in any other mode. I forgot to mention that in this mode of planting corn, you move across the beds. H.

CORN-SHUCK MATTRESSES.

To the Editor of the Farmers' Register.

As the laudable object of the Farmers' Register, is to diffuse as widely as possible the mass of knowledge which relates to domestic economy, thereby procuring for the many, the comforts which are at present possessed by the few; I take peculiar pleasure in aiding the benevolent design, so far as the narrow limits of my own information extend: and so, methinks, should every matron whose experience has surmounted the perplexities of household cares. For this purpose, I have deemed it of some importance, to call the attention of its readers to the use of shucks in making mattresses. I have often been surprised to find shuck mattresses so rare in families, where every convenience was at hand to make (with the most inconsiderable expense,) this article of comfort and utility.

Nothing but a little management is required for every farmer's family in the state to possess them. Independent of the comfort of mattresses in summer, I have often heard experienced physicians plead hard for their general use in this bilious climate; though common sense, I should suppose, is sufficient to discover the relaxing and debilitating effects of being nightly smothered on a feather bed, through the heat of summer; and the increased suffering produced by their use, during the prevalence of fevers, incident to our climate. For my own part, I have often suffered painful regret, as I have looked on the sick beds of the poor, where the possession of a hair mattress would be a luxury next to an impossibility for them to obtain; but I am happy to say, that the discovery of the use of hackled shucks, obviates all pecuniary difficulties, in the farmer's case at least.

There are few families in Virginia, where there are not some slaves, incapacitated by age or decrepitude for active labor; and since the bright era, which introduced the cotton gin, to supersede the use of fingers in *picking cotton*, they are thrown out of employment altogether; or, have little else to do, than to sit and stupify in the chimney corner. Now, for the benefit of all parties, I would recommend that a plenty of shucks, a flax hackle or common fork, and a barrel, should be conveniently arranged for the occasional exercise of the subject's faculties, until a sufficient quantity is shreded and packed up. When you have prepared your tick, and the weather is suitable, immerse and soak the shucks well in clean water, and then spread them thin in the hot sun to dry. This will cause them to curl and acquire the elasticity of hair. Be careful after hackling every bunch, to cut off the hard ends.

These shucks stuffed in a common tick, and tacked in squares through and through, will be quite comfortable on a feather bed, where cotton cannot be afforded—but if a case is made after the mattress style, and batts of carded cotton laid at top and bottom, of several thicknesses, and neatly tacked in squares; they may be made to equal, if not surpass any hair mattress; for you can have them as thick as you choose; and in neatness and purity of material, they will surpass the hair, though they may not in durability. I should think it a useless, or presumptuous display of my own knowledge on the subject, to describe farther the process of making the mattresses, but that I was told by an intelligent young housewife, that she had no idea how they could be conveniently completed. As I shall in such dilemmas, ever feel it a delightful task to assist the *young idea*, I will merely suggest, that the piece which divides the top and bottom of the mattress case, should be sewed all round the bottom, and bound with tape made for the purpose. The top part should be sewed to one side of this piece only, like a lid to turn back, until the batts of carded cotton are laid on the bottom of several thicknesses, and the shucks carefully and regularly packed in. Place the layers of cotton again over the shucks, and turn the lid over all, and bind it round like the bottom. It must be then laid on a frame, for the purpose of tacking it through and through. This will require a very long needle, which can be made at any blacksmith's shop.

A FRIEND TO COMFORT.

February 20th, 1834.

GRUBBING PLOUGH.

From the American Farmer.

Margaretta, York County, Pa.
December 9, 1833.

Mr. Hitchcock:—In the last number of the Farmer, a subscriber inquires, "whether or not there is such an implement now in *successful* use, among farmers, as the grubbing plough." This is an implement of husbandry I have never seen, therefore, the object of the present communication is not to recommend any new invention of the kind, but to inform your correspondent of the manner in which I cleared a piece of ground, which was grown up with bushes and undergrowth of various sizes from three to ten feet high: it was with a pair of oxen and a chain of ten or twelve feet long, with one end attached to the yoke, and forming a noose with the other around as many of the sprouts as could be encompassed by it, which when thus made fast, they drew out by the roots with great ease; it was in the spring while the ground was yet loose: it is probable the operation would not be so easy when the ground is dry and hard. Two active boys of fifteen years of age, will clear more ground in this way, than ten men will grub out in the ordinary method with mattocks. I do not think that the plan suggested for destroying the willow and alder, will entirely destroy the roots, and so long as any part remains, they will be liable to sprout again.

Yours, H. Y. S.

COMMERCIAL REPORT.

To the Editor of the Farmers' Register.

Sir,—Your correspondent greets you again with no cheerful tidings. The clouds which obscured our commercial horizon, when we last communed together, have not dispersed, but on the contrary, appear to be concentrating and assume a more threatening aspect.

The baneful effects of a disturbed currency, have certainly been as yet, less felt by Virginia, than by the Northern States; she is not so immediately susceptible to its action, owing to her being less commercial, and to its occurrence at a period when but a small portion of her agricultural produce, seeks a market at home, or an outlet to other countries.

The planter and farmer, however, though perhaps unconscious of the fact, is obtaining a smaller remuneration for his labors, than he has for many years past, comparing the value which his products bear in foreign markets, to that which he can realize in his own. Had no derangement of currency (and consequently of commercial facilities and arrangements) been produced, every article of export would have commanded at this time, from one tenth to one fifth more in price, than it now does;—nor is this decline compensated in part, by a similar one, in the most necessary articles of foreign production, which will not freely seek our markets, when commercial confidence is shaken, or its continuance rendered doubtful.

The depression of prices in this Eastern part of Virginia, is slight, compared with that which prevails in other portions of the union. Here, flour has fallen only a dollar and a half per barrel, and is nominally worth $4 or 4¼: but on the Ohio, it is reduced to about $2¼ per barrel, although the last crop of wheat was not large, and no important change has taken place in those foreign countries, to which we usually export it.

The prices of tobacco and cotton have lately risen in Europe, without creating such a corresponding advance here, as would have been excited under the competition which formerly prevailed. Public stocks generally, and foreign exchanges are below par—and state loans, which last year commanded a large premium, are now offered, without attracting a bid on any terms. Inland exchanges are no longer equalized; the bank notes of one state, are sold at a discount of several per cent. in another state; and a difference of two, three, or four per cent. is quoted in the market price of bank notes issued in the same state.

If a profit is derived by any party from this unusual state of things, we have not the consolation of knowing that one class of our community is enriched at the expense of another. The active capital at home being diminished, leaves a vacuum to be filled by that of foreigners, on whose forbearance and liberality we must be dependant, and who will doubtless strive to reap as rich a harvest as possible, from the field thus thrown open to them. They may now invest their funds in our stocks, on their own terms, if confidence in the stability of them, does not deter the purchase.

Heretofore, American enterprise and industry have sought occupation in every sea and on every shore;—but now, instead of numerous ships being fitted out for voyages to China, or to seek cargoes on the Brazil banks, or in the Pacific ocean, we hear that the ship owners are failing: We hear of manufactories closed: the hod and trowel of the mason, the mattock and spade of the canal maker lie useless, and the thousands dependant on active industry for support, have little else to do, than to converse together and talk of their distresses.

We hear that a metallic currency is to be the blessed result of an experiment now in operation. Perhaps some of your readers may remember the time, when this blessing generally existed in our southern and western states. When pack horses were necessary to transport silver from beyond the mountains, to the sea board, or when some cunning trader would incase his dollars in a cask of tallow or bees wax, and thus wagon his remittances to market. But they will also remember, that a few wealthy men could then monopolize the trade of the country, fearing no reduction of their exorbitant profits, from competitors, with moderate funds aided by bank capital; and they may remember how the price of every article was controlled in the absence of competition. Truly, that was the golden age, but the gold was in very few hands. Spain has a purely metallic currency. Where is her commerce?

A few years ago, there was an outcry made by some of our wise political economists, that the China trade ruined the country, by withdrawing from it a vast amount of silver—(perhaps they did not consider that, as silver was not produced in this country, the China trade caused it to be brought here)—but this outcry has ceased for some years past, because a substitute for silver was found in the universal credit of a bank, whose bills, remitted to Canton to pay for teas and silks, furnished a medium for remittances from thence to Bengal or Moscow, and after traversing almost the circum ference of the globe, facilitating innumerable transactions, ultimately reached the banker in London, on whom they were drawn: thus saving the expense and risk of transporting the precious metals, and the loss of interest during such transit.

Moreover, during the same time, a counter operation was going on, by shipments of our cotton, tobacco, &c. to Europe; on which shipments bills drawn by our merchants, were sold to the bank and remitted to London, to meet those which were finding their way from Asia. Nay, even the very teas and spices were carried by our ships, to supply several countries in Europe, and to replace in London the very funds which had been used to purchase them. This circuitous traffic gave employment to capital, which, in the form of bank stock held by the government, or by individuals, thus actively contributed to the wealth and prosperity of the whole country and indeed of other countries.

Is it asked, whether a substitute may not be found, when the existing source of this immense medium of negotiations shall be closed? Undoubtedly there may. Some foreign capitalist, like Rothchild, with credit as unbounded, as the institution which has performed these functions, may place his agents in our commercial cities, to furnish similar facilities: orders emanating from him may control the value of our public stocks, of our agricultural products and the credit of our merchants. His *fiat* may govern the rates of Foreign and of Domestic exchanges, and the amount of specie in any of our state banks. They must be subservient to him. If the federal or state treasuries

require funds, he, and the band of capitalists acting in conjunction with him, may fix the standard of our public credit, and elevate or depress it, as may most conduce to his profit and power. He may say to our government, as has been recently said to that of France, you must not march an army to such, or such a frontier!

Is such a power in a foreign hand, under foreign influence, not more dangerous than any which is under our own control?

But if no such potentate shall choose to take our finances, our exchanges and our negotiations under his protection, we shall have, instead of his concentrated action, the diffused one of many hundred institutions, each striving to extend the circulation of paper, unrepresented by specie. Every state, aye, every city, town and village, will have its own special circulating medium, which will vary in value, every mile and every day.

The traveller will, at each stage of his journey, call at a broker's shop to exchange one rag, which he has carried beyond the orbit of its value, for another which has its centre of circulation on the spot. That which he obtains to pay for his dinner, will be below par at the next stage where he stops to sup. Your readers may trace the effects of such a system, if they are not old enough to have experienced it. The subject need be pressed no further on this occasion.

If this communication trespasses on matters which you deem not within the proper scope and action of your Register, may not some indulgence be extended to your correspondent in this instance, at a moment when it is impossible to touch on any commercial subjects, without adverting to the causes which have so powerful an influence on them?

Your readers must not ascribe the preceding remarks to any political feeling on the part of the writer, nor consider him as advocating or condemning either party engaged in the present contest—nor as assuming or denying the constitutionality of any charter, or of any proceeding—but simply, as giving to the best of his ability, a hasty view of the present commercial state and prospects of the country.

X.

March 5, 1834.

POSTSCRIPT.

March 11.

Since my last communication was made, the letter of which the following is an extract was published in New York, in the Journal of Commerce of March 7th. It is from Manchester, England, and dated Jan. 26, 1834. The statements furnish some confirmation of my views before presented, and are the more interesting on account of the source and channel from which they are obtained.

X.

"The times seem to be sadly out of joint with you; an immense number of countermand orders have been received by the last two or three ships, and particularly by the Hibernia. In *Philadelphia* they appear more alarmed than with you, as parties there have written their agents here not to ship another piece of goods, and to sell any that may be ready for shipment, if it can be done without considerable loss. I am in hopes that capitalists in this country may be induced to invest their funds in America as *private bankers;* the subject is arresting their attention very much. Mr. ——, mentioned to me that a banker had applied to him for his opinion of sending out a large amount of money and establishing a house for that purpose—and I have also understood that the same scheme was in agitation in London. Money here is more plenty now than it has been. Discounts were done in London last week at three per cent."

From the same paper, March 7th.

EXCHANGE IN CHINA.

It is mentioned in the letters from Canton, that bills of exchange drawn by the United States Bank upon their bankers in London, had been sold at the rate of 4s. 4d. per dollar, while there was no sale at all for private bills. The fact is worthy of a moment's consideration, as illustrating the importance of such an institution. The China trade was formerly carried on almost wholly by exporting silver dollars. But within a few years past, the Chinese, perhaps having satisfied themselves with making silver gods, have turned their attention to articles of more substantial importance. They purchase large quantities of British goods, which renders exchange on London as good to them as dollars and better. But at such a distance and under the circumstances which exist, it is impossible to establish private credit firmly enough to sustain so large a business, under all the fluctuations of opinion. Generally to be sure, private bills have been negotiated with success, but nothing short of a great national institution has sufficient notoriety and firmness of responsibility to resist the suspicions which occasionally spring up. By means of bills of exchange, our teas and silks from China are paid for by the products of our own soil. For, the bills drawn on London and sold in Canton, are met and paid by funds resulting from sales of cotton and other articles in the ports of Europe. The great expense and risk of exporting specie is saved, and one cause of fluctuations in the money market avoided. A ship sails to Canton for a cargo of great value, and her whole outward cargo consists of three or four slips of paper, six inches by four. If the whole cargo is lost, every thing is saved. Pirates may capture it, or the fire burn it, still it is safe, and in possession of the rightful owner.

In the case of the China trade, it is evident that the bills of exchange answer every purpose of specie. The credit is as good as the silver. And the saving of expense enables the people to be furnished with teas and other articles of comfort or luxury, much cheaper than they could otherwise be furnished.

[The foregoing communication treats principally of a subject which is so closely, and to so great an extent, connected with the interests of the whole agricultural community, that we could not, with either justice or propriety, have excluded it from a journal devoted to the promotion and maintenance of those interests. Nevertheless, we would gladly have avoided the necessity of discussing the present "money pressure," because it has been improperly made a party question, and very generally debated upon the ground of one or the other side, subserving the views of particular individuals in their efforts to acquire, or to retain place and power. But though determined not to permit the Farmers' Register to be connected with party struggles—to become involved in the despicable game which is played by "the madness of the many, for the gain of a few"—still we will not yield our right to discuss any question of political economy, or of general policy, having an important bearing on agricultural interests, merely because political partizans have seized on it, to forward their own interested ends, or those of the leaders whom they slavishly follow, and implicitly obey. If every subject was prohibited, that had been used by others to aid party purposes, it

would be necessary for us to abandon the defence of every general and important interest of agriculture as soon as it was assailed: for what measure of government has ever been acted upon, that has not been converted to party uses? Nay, what question can be started, that may not be made a weapon or a defence, in party warfare?

Our correspondent's expressions are not obnoxious to the charge of being directed by the feelings or the interest of a partizan. His reasoning and statements are simply those of an experienced and well informed merchant. To the facts derived from his acquaintance with commercial affairs, we pay the utmost respect. But our politico-economical views as to the *currency*, have been acquired in a different school—and whether it is from our want of commercial knowledge, or that we are behind the lights of the present day, we remain of the opinion long entertained, that it would be far better if our currency was principally metallic. And we would zealously contend for a return to such a currency, provided (what we certainly do not believe to be the case now, if it will ever be,) that there was a sincere disposition on the part of either the people, or their rulers, to establish and adhere to such a rule of general policy. Whatever may be the immediate cause of the present alarming and general state of distress, the remote and efficient cause is the existence of a paper currency. Without denying the alleged advantages of the system of paper money, and its concomitants, while prosperity and public confidence continue, it may well be doubted, whether those advantages are not more than counterbalanced by such effects as are now felt, and such destruction of credit, depreciation of the currency, loss of property to individuals and to the nation, as were suffered in 1814, and some years after.]

"FARMERS' REGISTER."

Extract of a letter from a distinguished literary gentleman residing in New York, to the Publisher of the Farmers' Register.

New York, March 7, 1834.

* * Tell Mr. Ruffin, if you please, I read his Register regularly as it comes, and am reducing some of his theories to practice, in my city garden. I shall not fail to give him an account of the success of my new system of rural economy. My most potent and unconquerable enemies are certain caitiff caterpillars, that forage on my plants, devour the leaves of my grape vine, and like rascally epicures as they are, bury themselves in the luxury of my moss-rose buds. I wish he would devise and publish some infallible recipe for exterminating these moss troopers.

By the way, in the last number of the Register, there is a letter from Mr. Featherstonhaugh to Mr. Madison, on the subject of the Gold Mines in Virginia, in which that gentleman expresses his surprise that neither the early settlers nor the Indians should have had any idea of their existence. If he had looked into the old History of Virginia, by Captain John Smith, he would have found that the savages did know of the existence of gold in the interior, and that an expedition was sent in search of it. I have mislaid my old folio of Smith's History, and cannot precisely recollect the period or the circumstances. I only know that the search proved abortive, and the colonists never repeated it. I have no doubt that the information of the Indians referred to the very mines that have since been discovered.

CHEAT.

To the Editor of the Farmers' Register.

Essex, March 8, 1834.

From the variety of opinions expressed respecting the origin of cheat, I am induced to make a communication of what came under my own knowledge. In 1831, I stacked my wheat about in the field, and in a few days the wheat shattered from stacking came up very thick. The field not being grazed, I observed the growth the summer following; and to my great surprise, I found nothing but a luxuriant growth of cheat without a single head of wheat. This cheat could not have been produced from cheat, as I am very certain there was not as much in my whole crop, as was made from one of those stacks.

From the above fact I am induced to believe that cheat is not the production of faulty grains in wheat, but is produced from unseasonable seeding.

H.

THE TEASEL.

From the London Farmers' Magazine.

The teasel, perhaps, affords a solitary instance of a natural production being applied to mechanical purposes in the state in which it is produced. The head of the true teasel is composed of incorporated flowers, each separated by a long, rigid, chaffy substance, the terminating point of which is furnished with a fine hook. The use of the teasel is to draw out the ends of the wool from the manufactured cloth, so as to bring a regular nap or pile upon the surface, free from twistings and knottings, and to comb off the loose parts of the wool.

NATIVE COWS.

From the New England Farmer.

Dear Sir: In your paper of the 1st inst. is an article under the above head, taken from the American Farmer, who answers the question, "What breed of cattle is best for the dairy?" by recommending half blood Durham shorthorns. He may be correct for aught I can say, but you may judge from the following account of three cows of *native American stock*, entirely free, as I believe, from admixture with any of the foreign stock so much recommended.

I have made from these three cows, between the 1st January, 1833, and the 1st January instant, 535 lbs. of butter. One of the cows calved in March last, another in May, and a third in July. They have been fed *exclusively* on grass in summer, and hay in winter, with the exception of a few pumpkins in the fall. My family consists of ten persons, and we use cream almost profusely in June and July; during the season of the smaller fruits, which I raise in great quantities, we consume at least the cream of one cow. The greatest quantity of butter made in one month was in September, when it amounted to 107 pounds. The cows are all of them large, one *very* large, perhaps the largest in the country. She calved in March, and upon the dry food of that season even, made 48¾ lbs. butter in 5 weeks. My pastures in summer are very fine, and I keep them so by sowing them every spring with *unleached* ashes, 15 bushels to the acre, which throws out a profusion of white clover. The soil is dry and gravelly. The extent of my pasturage is 6 acres divided into three lots, into which the cows are driven to feed alternately, and these acres afford an abundant supply until the first of September, when I let them in upon the rowen of my mowing lot. Besides, I have about half an acre of lucerne and tall meadow oat grass, which I cut and give them in the spring before they are turned into the pasture, and which, for the last two years, has afforded

them an abundant supply of food for twelve days, besides allowing the pasturage to be well grown for longer use. I water them regularly three times a day from a well, having no other means; and they are carefully littered in winter. So much for *cows of native American stock.*

Pittsfield, (Mass.) Jan. 4, 1834.

STEAM PLOUGHS.

From the Gardeners' Magazine.

Two very ingenious mechanics, Messrs. Wykes and Phillips, Market street, Edgware road, have produced the model of a ploughing, or more properly, a digging or grubbing machine, to be impelled by steam. The model is well worth examining. It is arranged on the principle of rendering the action of grubbing the fulcrum for moving forward the machine; so that, a certain power of steam being applied, the machine would move along a ridge, or a breadth of such a number of feet as might be determined on, (say six, ten, twelve or fifteen feet,) at a greater or less rate, according to the tenacity of the soil. Such a machine would, no doubt, be applicable to many of the purposes of field culture, and more especially to the working of fallows. But it would not answer for ploughing up leys, or recent or tender grass lands to be sown after once ploughing; neither would it plough in manure, nor form lands into drills for turnips or potatoes; nor would it harrow, hoe, or mow, or reap, all which might be done by steam, as before observed.

To apply steam successfully to agriculture, it has always appeared to us that the engineer ought not to seek for a new implement, but simply for a convenient locomotive power for impelling the implements already in use, modified so as to suit the new impelling power. The power for dragging forward Lambert's mole-plough (*Encyc. of Agr.* § 2523) supplies the germ of this idea. There would be no difficulty in inventing a locomotive engine that would move itself any where, either on rough or smooth, level or sloping surfaces. There would be no difficulty of stopping this machine at any one point, throwing out or down long levers, with claws at the extremities, to serve as grappling irons to retain it firmly in its position. There might then be a vertical gin-wheel, with a chain, say of 100 yards. Supposing the locomotive machine taken to the first ridge of a field, the chain wound up, and the end of it attached either to one or many ploughs, harrows, or other implements. Then let the machine be put in motion, and advance ninety yards, unwinding the chain, which will now lie on the ground in a line between the steam machine and the plough or harrow machine. Now reverse the turning of the gin-wheel, and the plough will be dragged up to the engine. Change the wheel, lift up or draw in (all, of course, by the machine itself) the grappling levers, and proceed as before. To some this may seem, at first sight, a slow and awkward mode; but if a ridge of twelve feet were ploughed, or the width of three ridges harrowed, every time the machine advanced, a twenty acre field would be soon got over. Nothing could be easier than to adapt ploughs and all implements, even Bell's reaping machine, the thrashing machine, &c. to such a locomotive power. Whenever an ample reward is offered, the thing will be done. Or whoever thinks fit to employ such an engineer as Brunell, will have the locomotive power invented and executed in a month, as a matter of course. If this mode is not adopted, stationary engines, at the ends of the ridges, must be resorted to; or fixed points, found or placed there, to which an engine and plough, attached by a chain, might plough itself forward. We recommend the subject to the Mechanics' Magazine. It must never be forgotten, that indepently of the saving of horses and their food, the farmer would never be obliged to work his soil but when it was in a proper condition for that purpose. This, in our opinion, is one of the principal arguments in favor of the application of steam to agriculture.

FREDERICKSBURG, PETERSBURG, NORFOLK, THE ROANOKE—AND THEIR RAIL ROADS.

No. I.

To the Editor of the Farmers' Register.

I had scarcely read Hamilton's View of the Local Legislation of the United and Individual States, than I regretted to see so instructive and destructive a commentary on it, in the debate on the grant of money to the Roanoke road—a road destined to give to Norfolk, and through Norfolk to Virginia, the rank that both ought to hold in the southern section of the Union—a road, which is destined to give to Virginia, that preponderance of commerce, that must lead to a preponderance in consequence, in these United States. Early did Washington foresee it, and clearly did he discern the effects that would ensue, if the eyes of Virginia were not opened to her comparative losses of commerce and consequence, and if she was not as active as it was probable her neighbors would prove, and indeed, have proved themselves to be.

If we look to Chief Justice Marshall, we shall find him speaking thus on the subject. "The plan formed by France for connecting her extensive dominions in America, by uniting Canada with Louisiana, now began to develope itself; possession was taken of a tract of country, then deemed to be within the province of Virginia, and a line of posts was commenced from the lakes to the Ohio." Such were the objects of the prescient Duke de Choiseul; and, the no less prescient Washington, discovered, that the same difficulties were likely to occur, especially as Great Brithin had then secured Canada—and, such are the actual results, as they appear to every unbiassed mind, now that Spain has ceded her portion of southern and western North America.

"To this subject, (the connection of the eastern with the western territory,) the attention of General Washington had been in some measure directed, in the early part of his life. While the American states were yet British colonies, he had obtained the passage of a bill, empowering those individuals who would engage in the work, *to open the Potomac, so as to render it navigable from tide water to Well's creek.*" Marshall, vol. 4, p. 10.

In 1784, Washington went to Pittsburg. After returning from thence, "his first moments of leisure were devoted to the task of engaging his countrymen in a work which appeared to him to merit still more attention from its *political*, than from its *commercial* influence on the Union."

"He expressed unequivocally the opinion, that

the rivers of Virginia afforded a more convenient and a more direct course than could be found elsewhere, for that rich and increasing commerce."

His views extended farther: "After an accurate examination of the James and Potomac, commissioners were to search out the nearest and best portages between those waters and the streams capable of improvement, which run into the Ohio. Those streams were to be accurately surveyed, the impediments to their navigation ascertained, and their relative advantages examined."

He labored, in his letters to Congress, to establish the opinion, that the surveys he recommended, would add to the revenue, by enhancing the value of the lands to be offered for sale. "Nature," added he, "had made such an ample display of her bounties in those regions, that the more the country was explored, the more it would rise in estimation."

"He detailed the measures which would unquestionably be adopted by New York and Pennsylvania for acquiring the monopoly of the western commerce, and the *difficulty which would be found in diverting it from the channel it had once taken.* "I am not," he added, "for discouraging the exertions of any state to draw the commerce of the western country to its seaports. The more communications we open to it, the closer we bind that rising world (for indeed, it may be so called,) to our interests, and the greater strength shall we acquire by it. *Those to whom nature affords the best communication, will, if they are wise, enjoy the greatest share of the trade.*"

He viewed the subject in a more interesting light—*the political influence on the Union.* "I need not remark to you, sir," said he in his letter to the Governor of Virginia, "that the flanks and rear of the United States are possessed by other powers—and formidable ones too: nor need I press the necessity of applying the cement of interest to bind all parts of the Union together by indissoluble bonds—*especially of binding that part of it which lies immediately west of us*, to the middle states. For what ties, let me ask, should we have upon those people; *how entirely unconnected with them shall we be*, if the Spaniards on their right, and Great Britain on their left, instead of throwing impediments in their way, *as they now do*, should hold out lures for their trade and alliance. *When they get strength, which will be sooner than most people conceive, what will be the consequence of their having formed close commercial connexions with both or either of these powers? It needs not the gift of prophecy to foretell.*"

After some illustrative and instructive observations on the rapid settlement of the western states, he says: "*It is by the cement of interest alone we can be held together. If then the trade of that country should flow through the Mississippi or the St. Lawrence; if the inhabitants should form commercial connections which we know lead to intercourses of other kinds, they would, in a few years, be as unconnected with us as are those of South America.*"

"It may be asked, how we are to prevent this? Happily for us, the way is plain. Our immediate interests, as well as *remote* political advantages, point to it, whilst a combination of circumstances render the present time more favorable than any other to accomplish it. Extend the inland navigation of the eastern waters—communicate them as near as possible with those which run westward—open these to the Ohio—open also such as extend from the Ohio to Lake Erie—and, we shall not only draw the produce of the western settlers, but the peltry and fur trade of the Lakes also, to our ports—thus adding an immense increase to our exports, and binding those people to us by a tie which never can be broken."

Comment on such sagacious foresight would be insulting. In it we behold the glorious and successful attempt of De Witt Clinton to make New York the *empire* "*state.*" In it, we discover the energy of Pennsylvania and of Maryland. In it we discover the creation of the Welland and the Rideau Canal. In it, we discover the exploration, now proceeding, with a view to a passage by a rail road, down the banks of the St. Lawrence, as far as Chaleur Bay, to unite Halifax and Fredericton with Quebec; and thus convert the ports of New Brunswick and Nova Scotia, with all the advantages of free ports, into the importing ports of United and British America. In it, do we see the attempt, by the united exertion of Illinois, Indiana, &c. to create the means of carrying the scheme of De Choiseul, to which I have already alluded, into full and perfect effect, by means of a rail road rom Alton to Lake Erie; and thus to make all the western states dependent on Montreal and Quebec, Halifax and Fredericton. In it, do we, on the other hand, see the attempt making to lay down a rail road, from New York to the eastern extremity of Long Island; and soon shall we see another approach to Fredericton and Halifax, by perhaps, an undulating rail road, from Boston, *via* the Newburyport Turnpike, to Newburyport, and thence to Portland. From that city, it will not be long before such a road finds its way to the towns of New Brunswick and Nova Scotia; and, aided as it most probably will be, by a competing rail road from Augusta or Hallowell to Quebec, it is not improbable that, unless the tariff is wholly reduced, and *direct* taxation (I am not writing, nor, thank God! ever did, for popular effect,) substituted, it is almost certain, that the importation from, and commerce with, foreign countries, will vanish, possibly, from New York, Pennsylvania and Massachusetts, but certainly from the shores of the Chesapeake.

And what, sir, with circumstances like these staring us in our face, is the Legislature of Virginia about—attending to the arguments and statements of the burgesses of Petersburg, who, following the example of Pombal, want their borough, like Lisbon, to be created into a privileged town, which they expect will rival, but with very different means, their namesake in the Baltic, whose founder, dark as was the age in which he lived, could not have committed such an errer.

However, so far as the House of Delegates is concerned, a victory over selfishness and ignorance of their own interest and the true policy of the state, has been obtained. It is indeed a victory, and such a one as I hope the people will obtain, who are advocating the creation of a road from Fredericksburg to Richmond, another from Petersburg to City Point; and if I did not learn the strong opposition of the worthy member from Richmond, I would add, a road from Richmond to Petersburg—thus giving the state the high honor of originating a set of rail roads, that are not only to create Norfolk, Petersburg and Richmond into

ports and places of importance, but to furnish a powerful link in the bright chain now uniting this confederacy. I write this advisedly, and a long consideration of the subject enables me to say, that the more roads the better, for all these places.

Here I am also led to give an opinion as to future profits—profits which it seems are expected to be derived from the road system; and profits, the prospect of which appears to have led to the bitter opposition, the Roanoke and Norfolk people have experienced. Now, for my part, I think no road proprietor need give himself the trouble of calculating on any large return on his rail road stock: if he does, he will be deceived. *Indirectly*, if a merchant or a planter, he will be benefitted; but, that the mere proprietor of stock will be *directly* benefitted, I have not the least idea. The experience of France and Great Britain teaches us that in industrious and busy countries, roads are as uniform a tax as a horse or a plough. Roads have never been *of themselves* productive, nor can they ever be so.

Hence, I cannot but hope, that for the remainder of the session, we shall see all hands unite in procuring the state's subscription to the roads that are asked for and required; and an end put to this ridiculous contest for the furtherance of local interest, when the general interal interest is so concerned in effecting every one of these works. The three roads together will not require more than $500 or 600,000; and, when it is considered that the improvement of the James is suspended, I cannot but hope that the Chesapeake and Ohio Canal will be left to the care of Congress, and the $500 or $600,000 voted *una voce* to the above named rail roads. Once let the two roads reach the Roanoke, and it will advance with great rapidity to Raleigh, and then to the Pee Dee, *via* Fayetteville; and thus will Richmond, Petersburg and Norfolk, become not only marts of trade for the Carolinas, but ports for the transmission of their produce to the shores of Europe.

SMEATON.

FREDERICKSBURG, PETERSBURG, NORFOLK, THE ROANOKE—AND THEIR RAIL ROADS.

No. II.

To the Editor of the Farmers' Register.

I concluded my last with an opinion that the holders of rail road stock, who expected to obtain a large dividend, would be disappointed; and that the benefits *to be derived*, would be rather *indirect* to the individual, though there is no doubt, that to the state, they will be *direct*.

The idea is still more indelibly fixed on my mind, by the crude notions of some writer in the Enquirer, and some of the speakers in the Legislature, whose object was to prevent that body subscribing to the Portsmouth, because it held the usual *two fifths* of the Petersburg road stock. Now setting aside any consideration of the folly of expecting a dividend of any magnitude, I apprehend there has been a total misconception of the original motive of the Legislature, in determining to furnish *two fifths* of all the capital subscribed for public works. Knowing the danger attached to the expenditure on such works, by either a general or local government, I have ever viewed this plan as one which, in the advance of the *three fifths* by individuals, offered a full security for the safety of the other *two fifths* by the state; and that the last thing to which the commonwealth looked, was a *large*, or even a *little* dividend. Indeed, I cannot but hope that, as soon as the Legislature sees the admirable effect of the rail roads to the Roanoke, that it will assent in future to receive either a smaller dividend, or when works shall have been proved practically useful, no dividend at all, on the mere condition that it is to be exempt from charge.

The state can well afford to do this; for, in the results of all works that *are* practically useful, the value of property will be so enhanced, as to add to the sources of taxation; and, *if necessary*, diminishing the amount individually paid—thus achieving a most important end.

For instance, Norfolk and Petersburg have, in their corporate capacities, both contributed $—— to the roads now laid, and laying down, from the Roanoke. Their taxable rental may be stated at $100,000, and the tax levied at $1,000, or 1 per cent. I have heard it said, that at Norfolk, perhaps in a favored situation, property will now rent for as much as it would sell, before the Dismal Swamp Canal (I wish its name could be altered,) was completed. It is not going too far to say, that if this circumstance be true, or even half true, as soon as the road is completed, the taxable rental at Norfolk will be quadrupled, or $400,000; and that the tax will be at the rate of one quarter of a cent, instead of one cent: but, such will be the immeasurable and unimaginable effect on Norfolk, and I hope and believe on Petersburg, that the one cent per cent. on the $450,000 will then be more readily paid than the same sum on $100,000; and this alone would furnish an amount equal to the discharge of any interest incurred in obtaining loans for this work.

Apply this reasoning to the state. Its lands are valued at $200,000,000. Is there the slightest question that, stating the cost of a rail road to the Tennessee and Kentucky lines, and to other points at $10,000,000, that the value of the lands would be doubled; and that, perhaps, on the present scale of taxation, the interest on this $10,000,000 could be discharged without requiring it from the other contributors to the work, or rather the holders of the stock. Such a plan would insure safety to the capital of the state, profit to that of individuals, and general welfare to the whole community.

This doctrine may seem bold, when such "*searching sagacity*" and such "*powerful* scrutiny" have, in all the superior flight of their supereminent wisdom, found fault with the mode in which the Portsmouth company has presumed to raise its capital. This "*sagacity*" and this "*scrutiny*" object that the corporation subscribed too large a proportion—a proportion, could you believe it reader, much larger than the town of Petersburg subscribed to *its* road. This is really a daring act, and as *scire facias* (or as they are sometimes called, "*skiry factions*,") are in vogue, I hope Messrs. Sagacity and Scrutiny, those "*second Daniels come to judgment*," will speedily obtain one, in order that the punishment merited by such audacity may be ascertained and awarded.

I trust also, that the folly of such language as the following, and the daring attachment, which the citizens of Norfolk and Portsmouth have exhibited in the fostering their own interests, and forwarding those of the state, as well as their total

forgetfulness of the great liberality and signal disinterestedness of Richmond and Petersburg, will be placed in their proper light. "This I will say, that if any one thing more than another, could prove the great importance of the work, the interest which the citizens of Portsmouth and Norfolk felt in its success, their strong belief and confidence in its feasibility, it was the unparalleled unanimity with which the property holders, of every profession and trade, came forward and staked that property on the issue. The Legislature could not require a better test of the sincerity of their representations, so far as it relates to the confidence which they have in the utility, practicability, and ultimate profits of the work."

Now, any man bold enough to speak in this manner, and especially in the face of such "*searching sagacity*" and such "*powerful scrutiny*," must be audacious indeed—as audacious as was Mr. Law, (afterwards Lord Ellenborough,) when, in the celebrated forestalling case of *The King* versus *Waddington*, he told Chief Justice Kenyan, that he would "*confidently contend*" for certain principles of the liberal cast. The enlightened Welshman told him he believed there was nothing for which he would not "*confidently contend.*"

This is all I have a wish to say at present, except to request your insertion of an extract from a New York paper, on the subject of the Wabash and Erie Canal, and another from Governor Marcy's message and the Comptroller's report to the Legislature of the "empire state." However, it is impossible not to observe that the language of the first paragraph is infinitely more applicable to Virginia than to New York; and that it is to be hoped, that all the Governor says, combined with the threatened results of the Wabash and Erie Canal, will induce the electors of Virginia to send such men to its next Legislature, as will forever exclude the expression of such sentiments as have really disgraced the existing body. They have been founded on selfishness and ignorance—the one in the leaders, the other in the followers of the ridiculous scheme to deprive Norfolk of the rank and consequence so naturally and justly (for never did nature and justice so cordially unite,) its due, and, at a period when the south required such a port to give it importance and commerce. Thank God! these wordy patriots have failed in their attempt. All I wish is, that their minds may become as illuminated as have been the houses of Norfolk on so glorious a victory over illiberality and ignorance; and where is it that we are to look for the germ of this outrageous state of things?—for at such a period as that in which we live, and in such a place as Richmond, it *is* perfectly outrageous: Richmond, where there have been more homolies printed, and pronounced on state rights and free trade, rigid construction of the constitution and liberal principles, than in all the other states of the United States, and all the other countries in the world. There, in theory, all these privileges were lauded to the very skies; but when they come into practical conflict with self-rights and self-interest, they vanish like the morning mists. Surely, with all this "prodigality of words," there is too much "poverty of heart"—for, such a quality only, could induce a wish to sacrifice the possession of the best sea port, and one that may prove the greatest mart of commerce in the south, to the *imaginary* benefit of Richmond and Petersburg—I say *imaginary*, because I do not believe they will suffer, if, at least, they act liberally; but on the other hand, I am convinced that they will reap their full proportion of the general prosperity which must arise from the system of internal improvement now so happily in progress.

From what source did this illiberality and ignorance arise? Am I right in attributing them to the preponderance of lawyers in the legislature? I wish the sentiments of Mr. Burke and the intelligent editor of Blackwood's Magazine were more generally read, more fully comprehended, and more universally believed. Speaking of the French revolution, the editor says: "Burke, judging of the National Assembly on this principle, decided at once that its progress must be a perpetual degradation. By analyzing its contents, he showed that the most hazardous classes of society in France constituted its majority. Among those, *the lower members of the law* were the most predominant; and his reasons for distrusting them as legislators *are* fully applicable to England as to the country which they subverted."

"Who could flatter himself," observes Mr. Burke, "that men who are habitually meddling, daring, subtle, active, of litigious dispositions and unquiet minds, would easily fall back into their old condition of obscure contention, and laborious, low and unprofitable chicane? *Who could doubt but that, at any expense to the state, of which they understood nothing, they must pursue their private interest, which they understood but too well?* It was not an event dependent on contingency. It was inevitable. It was necessary. It was planted in the nature of things. They *must* join (if their capacity did not permit them to lead) in any project which could procure to them a *litigious* constitution—which could lay open to them those innumerable lucrative jobs, which follow in the train of all great convulsions of the state, and particularly in all great and violent permutations of property. * * * * * * Forbid it, that I should insinuate any thing derogatory to that profession which is another priesthood, administering the rights of sacred justice. But, while I revere men, *in the functions that belong to them*, I cannot, to flatter them, give the lie to nature. Their very excellence, in these peculiar functions, may be far from a qualification for others. *It can not escape observation, that, when men are too much confined to professional and faculty habits, they are rather disabled than qualified for whatever depends on the knowledge of mankind, on experience in mixed affairs, on a comprehensive view of the various complicated and internal interests which go to the formation of that multifarious thing called a state.*"

"In these remarks," adds the editor, "the allusion was directed to the crowd of village lawyers, and other obscure and unprincipled members of the bar, in a country where, as none but the great officials of the profession were held in any public esteem, the general character of the class must be lowered to its rank.

"The bar in England justly stands on a superior place. But there scarcely can be a doubt, that the eye which looked so deeply into foreign society, had more than glanced on the condition of the Legislature at home, and *the hazard which it ran from the influx of lawyers into the house.* Burke distrusted their qualification. He might

have gone farther with impunity, and decided on their unfitness. He feared *their want of political comprehensiveness*. He might still more justly have denounced their want of political integrity. He characterized their mind, as stiffened to a circle of routine. He might with more fidelity have cautioned his country *against the fatal flexibility which legislative lawyers exhibit in adopting every side to the violation of every principle.* To this rule there may be striking exceptions. But the general rule, beyond all controversy is, that the lawyer forms a distinct species in the house, and that his professional habits, training him to the defence of both sides of all questions, rapidly extinguish in his bosom the stern sense of truth that this result is so perfectly understood, that it is *allowed for;* and that few men look on the tergiversation of a political lawyer as a matter of surprize; fewer still a matter of indignation, and none at all as incapacitating the zealous antagonist of to day, from being the equally zealous advocate to morrow. The public opinion of the lawyer's motive in entering the Legislature, is no more led by his declarations than it would be by his briefs. He is looked upon only as extending his practice to a higher court, pleading not for his client but for himself, and angling not for fees, but for attorney general-ships, chief justice-ships, and the other golden baits, which the world, half laughing, half in scorn, universally admits to be good and true motives for the conversion of a lawyer.

"But even the mental functions required for the senate and the bar, are singularly distinct. The one is analysis, the other combination; the one is the detection of error, the other the acquisition of truth; the one is the labor to bring forward *part* of the question, the other to bring forward *the whole.* The distinction is as wide as between the pleader and the judge; between advocacy and deliberation. If the Legislature is to perish, a surer mode could not be adopted than pleading it with lawyers. If the Legislature is to be reformed, more effective methods could not be adapted than clearing it of every *practising lawyer* now and forever more."—*Blackwood, Nov.* 1833. *pp.* 548-9. *Boston edition.*

To conclude, I would say, that since I have written the above, I have met with Mr. Bruce's admirable speech in the House of Delegates; and I request you to superadd an extract from it, illustrating in some measure, my opinion on the subject of advances in money by the state; and close this paper with a simple observation, that, as to the increase of revenue, he must be infinitely below the mark. Will he be pleased to reconsider the matter, and perhaps, when he recollects the annual increase of the tolls on the James, he will confirm, as well as illustrate my ideas on the subject?

"The gentleman from Petersburg, thinks the interest of the state in the stock of the Petersburg Rail Road Company ought not to be jeoparded by raising up a rival. If the state were a mercenary capitalist, who had invested his money, for the purpose of turning a penny, there might be some reason in the argument. But, sir, what was the object of the state in establishing the two fifth system? It was not based on a principle of speculation, but to stimulate her citizens to exert themselves for the improvement of the country. To call forth all the energy, the enterprise, and the capital of individuals, and direct them to a great and laudable object; to stimulate, in fine, each and every section of the state, to increase the facilities of commercial intercourse. The state too, by this system, not only avails itself of the sagacity and economy of individuals, but has by it established the most equitable principle on which its resources can be divided. Though I am willing to admit, that a subscription on the part of a company of three fifths of the capital necessary for any scheme of internal improvement does not bind the state to a subscription of the remaining two fifths, yet it is a strong reason for its so doing. The funds of the state ought not to be given away arbitrarily, but upon some fixed principle, and I know of none better than the two fifth principle. I therefore conclude, that where individuals subscribe three fifths, the state, *prima facie*, should subscribe the remaining two, to be controlled by the circumstances of the treasury and the nature of the work. But sir, when we take a more enlarged view of the effects of this work on an extensive section of country, the probable increase of its wealth and resources, its probable agency, too, in raising up Norfolk into a seaport of consequence, the state's interest of $9,000 per annum in the Petersburg road will sink into comparative insignificance. The gentleman has attempted to alarm the house by the very appalling information that the state could not pay the interest without raising the taxes. I presume it is hardly necessary for me to inform the very intelligent chairman of the committee on finance, that at the present rates of taxation, the revenue of the state is increasing about $12,000 annually, which is more than ample to meet the interest of $190,000, which the state is invited te subscribe to the Portsmouth work." SMEATON.

ILLUSTRATIVE ADDENDA.

Extracts from Message of the Governor of N. York.

"While our public works have been attended with local advantages, they have contributed, even beyond our anticipations, to the general prosperity of the state.

"It was our fortune that the most practicable route for a water communication between the Atlantic ocean and the great western lakes, lay through our territory. This advantage was early discovered by the sagacity of the people of the state, and effectually improved by their enterprise. The internal commerce carried on through the Erie Canal, aided as it is by the improvement executed by the enterprise and energy of the state of Ohio, has, during the past season, increased to a magnitude which was supposed to be attainable only in its full maturity, and has extended to regions which were conceived to lie beyond its utmost limits. The country around those lakes, and along the rivers emptying into them, as well as the valley of the Ohio, quite down to the Mississippi, have been supplied through this channel with some portion of their merchandize. Boats are daily seen passing upon it, freighted with goods destined for the territory of Michigan, the states of Ohio, Indiana, Illinois, Kentucky, Tennessee, and even for Missouri and Alabama. The delightful climate of this western region, the great fertility of the soil, and the numerous conveniences it offers for the enjoyments of human life, are daily becoming better known, and attracting to-

wards it an increasing tide of emigration. No human efforts—no conceivable changes of circumstances can check its rapid settlement, or put far off the time when it will be the abode of a population of many millions, abounding in wealth, and seeking the comforts and luxuries to which commerce must necessarily administer. Its trade will increase with its wealth and its numbers. If our canals are to be what a wise management cannot fail to make them—the principal channel for this trade—we must calculate its extent, and make them adequate to this object. When our system of internal improvements was commenced, a great part of this fertile region was a wilderness, and scarcely a sail was spread, for the purposes of commerce, on the great western lakes. The advancing steps of settlement have but just passed the borders of what was then a wild domain, and it already abounds in products demanding a market, and inviting an exchange for articles from merchandize from the Atlantic states. Lake Erie now appears like a frequented track in the highway of commercial nations. Its waters are navigated by twenty steam boats, and one hundred and twenty eight sloops and schooners.

"The shipping on this lake has increased in the three last years, from six to eighteen thousand tons. The tonnage entering the port of Buffalo last year, was more than two hundred thousand; and an hundred thousand passengers, are estimated to have left it for the west.

"We ought not, however, to flatter ourselves that we shall enjoy what we now possess, and what lies before us, without competition. The western trade is a noble prize, for which several of the Atlantic states are contending with a laudable emulation; and they are making powerful efforts to remove the barriers interposed by nature between them and their object. We look on their exertions with no unfriendly feelings; and we trust that they will view, in a like spirit, our efforts to administer to the wants, and to subserve the conveniences of the western country.

"It has already become quite evident that the capacity of the Erie canal will not much longer be adequate to the exigency of the business on it. The improvements which will soon be required, are double locks, to facilitate the passage of boats, and an enlargement of the canal in its width and depth. These improvements must necessarily be made under great disadvantages. The public interests will not allow of an interruption to the navigation; and a considerable part of the labor must therefore be performed in the winter season. This subject will probably be presented to you in a communication from the officers having the charge of the canals, and it will undoubtedly receive from you the attention its great importance demands.

"The extent of business on all canals is increased by the facility of transportation, and a reduction of the expenses. By enlarging the capacity of the Erie canal, the cost of transportation will be diminished. The tolls are considerable part of the expense. This subject has occupied the anxious attention of the Canal Board, during the present year; and some of the beneficial results to which I have alluded, particularly the wide diffusion of the trade into the western and southwestern sections of the union, are justly ascribable to the enlightened views of this board, and the judicious modification of the rates of toll. Previous to opening the canals last season, the tolls were reduced twenty eight and an half per cent. on most of the products of the country, and fourteen and a quarter per cent. on merchandize. Notwithstanding the reduction, the amount of tolls received on the Erie and Champlain canals during the last season, is one million, four hundred and sixty-four thousand and fifty-nine dollars and ninety-eight cents, which is two hundred and thirty-four thousand, seven hundred and seventy-six dollars and fifty-one cents more than the receipts of the preceding year. This board have it in contemplation to make a further reduction on merchandize, of twenty-five per cent. on the present rates of toll, before the navigation opens in the spring. This reduction will bring the tolls down nearly to the constitutional limit. It is probable they might be reduced on some articles below that point, if it were practicable, without lessening the total amount of revenue."

"*Indiana.*—The message of Gov. Noah Noble of Indiana, is evidently the production of a man of no ordinary mind—for such minds seldom reach these high stations—and enters into much detail on the affairs requiring the attention of the Legislature. This state, like almost every other in the union, is not incumbered with any debt. A new and more equitable method of assessment has been substituted for the imperfect system hitherto pursued. *Thirty-two miles of the Wabash and Erie canal* will be completed next season. It is very easy for our young sisters to undertake these spirited enterprises, and very natural for them to wish to, when they see Uncle Sam ready to thrust his hands into his pockets to help them on all occasions, be the request ever so trivial, even down to a mud-scow, or buoy, or wheel barrow. But this age of prodigality, of which Ohio, Maryland, &c. have availed themselves so opportunely, has gone by. Little Indiana too, a mere wilderness, comparatively speaking, has had no less a slice than some 300,000 acres of *our* lands. The canal is to extend across Ohio to the lake, and the last mentioned state, if she does not co-operate, promises to permit Indiana to complete the work. The Wabash river too, which only yesterday, it seems, was the scene of Tecumseh's exploits, and the hunting-ground of his tribes, is to be improved conjointly with the state of Illinois. The Michigan *road* is grading, and here also, Uncle Sam, to use Governor Noble's phraseology, has *donated* some 100,000 or more acres to give a helping hand. Really Jonathan is a true type of his grandfather Bull—a perfect lunatic and spendthrift in expenditures. The judiciary proceedings have been simplified by merging a portion of the duties of the probate into those of the circuit courts. Governor Noble strenuously urges an extensive system of rail road communications, and seems deeply imbued with a disposition to promote every laudable enterprise which can advance the prosperity of the state. The common school system is in a flourishing state, under the provisions of the constitution making it obligatory."

Synopsis of Canal debt of New York.

Tolls for 1833,	$1,360,155 45
Expenses of collection,	25,800 00
Total amount of tolls,	$1,385,955 45

Actual amount of Revenue received in 1833 *from all sources.*

Tolls,		$1,324,421 63
Vendue duty,		181,014 23
Salt duty,		227,860 05
Interest, &c.		141,318 60
		$1,814,614 41
Expenditures.		
Interest,	$337,794 88	
Repairs,	330,759 44	
Sundries,	50,898 76	
		739,433 08
Nett revenue,		$1,135,161 33
		$4,930,915 15
Surplus Funds.		
Interest,	$356,794 88	
Purchase of stock, (part payable in 1845,)	1,566,310 03	
Superintendants,	330,759 44	
	$2,253,864 35	
Sundries,	74,454 04	
		2,328,318 39
Balance to be applied (1833) to debt,		2,602,594 76
Balance due for canals (1833,)		$2,920,064 53

"If the annual receipts for three years to come should equal the revenue for the year embraced in this report, there will be funds sufficient to pay off the entire debt contracted for the construction of the Erie and Champlain canals, nine years before the latest period fixed by the state for the redemption of the stock.

"We quote the following paragraphs from the report:

"*Redemption of Canal Stock.*

"From the foregoing statement it will be seen that since the last annual report, the commissioners have purchased and cancelled $1,478,376 57 of the stock issued for the construction of the Erie and Champlain canals.

"The 7th sec. title 2d, of chap. 9th of the 1st part of the Revised Statutes, provides that 'the commissioners of the canal fund shall, from time to time, apply the surplus revenues of the canal fund, after paying the interest of the canal debt, to the purchase of canal stock of this state, if in their opinion such stock can be purchased upon advantageous terms; and the certificates of stock so purchased shall be cancelled.

"The commissioners have for several years been desirous of applying the surplus funds in their hands to the redemption of the debt, in conformity with the requirements of the section above quoted. Their views upon this subject have been presented to the legislature from year to year, in their annual reports.

* * * * * *

"The surplus moneys which have been rapidly accumulating since 1826, amounted, on the 30th September, 1832, as stated in the last annual report, to the sum of $3,055,247 65. This great accumulation of funds in the hands of the commissioners, with the prospect of having this sum increased, by the ordinary receipts, to at least six millions of dollars, before any portion of the debt would be payable, has been a source of much solicitude to the commissioners; and they have been so fully impressed with the importance of availing themselves of the first, and of every opportunity to purchase and cancel the stock, that all the loans and deposites of the surplus moneys have been made with reference to this object.

* * * * * *

"The commissioners were so strongly impressed with the importance of applying the surplus funds to the payment of the canal debt, that they determined in January last to redeem the stock, whenever it could be obtained on such terms as would render the purchase equal to an investment at an interest of about 3½ per cent.

* * * * * *

"This determination of the commissioners was made known to other dealers in stocks; and letters were also addressed by the comptroller to a number of the stockholders whose residences were known, offering the premiums before stated, as an inducement for them to surrender the stock.

"On the 1st of August, the stock of 1837, then having about four years to run, the commissioners resolved to reduce the premium one per cent. and from that time, to the 1st of January, 1834, to pay 5 per cent. premium, and the current interest upon the 5 per cent. stock, and 8 per cent. and interest upon the 6 per cents.; and the comptroller, on the 7th of August, issued a circular, which was sent to all the stockholders whose residences could be ascertained.

"The efforts of the commissioners to obtain the stock were so successful, that the funds in the general depositing banks were soon exhausted, and it became necessary to draw upon the monies which were on deposite at an interest of 4½ per cent. At this rate of interest, upon a calculation merely arithmetical, it would appear less favorable to the interests of the state to purchase the stock at the premiums paid, than to continue the deposites in the banks. But the extinguishment of the state debt, always a desirable object, is peculiarly important in the case of the canal debt, from its connection, by a constitutional pledge, with the regulation of the tolls and the application of the canal revenues. These, and other considerations, to some of which allusion has already been made, far outweigh, in the opinion of the commissioners, the apparent loss to the fund of about one per cent. by the purchase, and are decisive in favor of the policy which has been pursued. It is proper also to add, that the premiums paid, have not in general exceeded the market value of the stocks, and the commissioners had no alternative between paying those prices and suffering the funds to accumulate in their hands.

Loans and Deposites of the Canal Fund Moneys.

"Since the last annual report, loans have been made from the surplus funds, at 5 per cent. interest, as follows:

Ogdensburgh Bank at 5 per cent.	$30,000 00
Bank of Albany, at 5 per cent.	50,000 00
Leather Manufacturers' Bank, N. Y. at 5 per cent.	50,000 00
Union Bank, N. Y. at 5 per cent.	50,000 00
Yates County Bank, at 5 per cent.	20,000 00
Total,	$200,000 00

Notwithstanding the large sum which has been applied to the extinguishment of the canal debt, the interest received upon the surplus moneys remaining in the banks for the year ending the 30th of September, 1833, amounts to $122,236 74. The estimated interest for the current year is $130,-120 61."

"The general depositing banks are the Mechanics and Farmers bank, and the New York State bank, of Albany. The deposites in these banks being drawn upon at sight for the current expenses of the canals, and to pay the interest upon the canal debt, the rate of interest paid for these deposites is only three and a half per cent. When the commissioners commenced purchasing canal stock, there was a deposite in the banks of more than six hundred thousand dollars. The commissioners drew upon these deposites to such an extent, that on the 14th June, the amount in the Mechanics and Farmers bank was only $47,020 83, and in the New York State bank $48,474 49. It will be seen by reference to the table marked L. that the total sum received by the two banks above named, during the year, was $1,326,515 47; and that the sum drawn from them by the commissioners during the same time, was $1,571,112 43. The accommodation afforded by these banks, in giving drafts on New York, to pay for stock purchased, has greatly facilitated the operations of the commissioners in cancelling the debt, and has enabled them in all cases to transmit the funds for the payment of stock, on the afternoon of the same day on which notice of its purchase was received.

"*Reduction of Tolls.*

"The canal board, in March last, made a reduction in the rates of toll upon wheat, flour, salted beef and pork, butter and cheese, and most of the productions of the country coming towards tidewater, which was equal to about twenty eight and an half per cent.; and a reduction upon merchandize and most articles passing from tidewater, which was equal to about fourteen and one-fourth per cent. upon the former rates. These reductions in the rates of toll, applied to the same commodities which were transported upon the canals in 1832, would have diminished the aggregate amount of tolls about 150,000 dollars. Such, however, has been the increase of business upon the canals, that the amount of tolls received from the commencement of navigation on the 22d of April, to the 30th of September, has exceeded, by the the sum of $209,566 72, the tolls for the same period of the preceding year; and by the sum of $144,679 76, the receipts for the same months of the year of 1831. The amount of tolls was considerably diminished in July and August, 1832, by the prevalence of the cholera; and therefore the comparison is carried back to 1831, which was a prosperous season for the canals.

"How far the reductions in the rates of toll have contributed to swell the total revenue, by increasing the commodities transported, and how much of this increase is to be credited to the natural growth of the country which seeks a market through the canals, is not easily determined.

"In relation to the trade of the western states generally, the maximum of revenue to the canal fund, is probably to be attained, by a considerable reduction from the present rates of toll. Merchandize, during the past season, has been transported through the Erie canal, by way of the Lakes and the Ohio canal, to the borders of the Mississippi.* To continue and extend this trade, a further reduction of 25 per cent. of the tolls on merchandize, bringing that article within a fraction of the constitutional minimum, is contemplated.

"An arrangement has been made between the canal board of this state, and the canal commissioners of Ohio, by which it is expected that a reduction in the rates of toll upon merchandize, of 25 per cent. from former rates, will take place simultaneously upon the New York and Ohio canals, at the opening of navigation in the spring of 1834.

"If the canal board had the power of reducing the toll upon lead, to one or two, instead of five mills per 1000 pounds per mile, it is supposed that a branch of trade, important to our citizens generally, if not to the canal revenue, might be opened with the mining country between Lake Michigan and the Mississippi river. *The revenue could not be diminished, and might be considerably increased by such a reduction in the rates of toll.*"

"The constitution," says the Governor of New York, "is now so amended as to allow the Legislature to reduce the duty on salt manufactured in the western part of the state, to six cents on each bushel; this subject will, therefore, properly occupy your attention. The vote on the amendment of the constitution shows clearly that a reduction is generally expected; but a question may arise as to the amount proper to be made at this time. I think there are sufficient reasons for bringing down the duty at once to the minimum rate. Salt is an article of general consumption, and a diminution of its price is a direct benefit to the consumers. The demand for that manufactured in this state is regulated by the extent of the country to which it furnishes a supply, and this extent will be enlarged as the price is reduced. A regard to the public revenue, as well as to the interest of the manufacturers, requires that the region for consumption should be extended as widely as practicable. The material for the manufacture of this article is so abundant, that the supply may be easily equal to the utmost demand.

"*Of the salt manufactured by our citizens, large quantities are consumed in the Canadas—it supplies the country around the lakes, the western part of Pennsylvania, and a large portion of the state of Ohio, and enters into competition with the salt made at the Kanawha springs in Virginia, on the borders of Indiana and Illinois.* A reduction of six and one half cents on the bushel will be the means of extending the sphere of consumption far

* How long will it be before we see the cotton of the Mississippi go to an Atlantic market, and perhaps, if Virginia still chooses to abandon it, to New York, via the western canals and rail roads? It can now be landed at Lexington, Ky. from New Orleans, for 1 cent per pound; and there is little doubt, that double that sum will take it to New York. Provided it is necessary, the state can reduce its tolls to almost nothing; if by so doing, it can obtain the trade of the west, i. e. in addition to its other traffic, the cotton trade. In a short time the debt will be discharged, and $350,000 or $400,000 will pay its repairs, &c. The increase of trade to the city of New York will be such as *even* to enable it to pay this sum: and to the state, its payment would be trivial indeed. The rivalry of the St. Lawrence will occasion a farther, if not a full reduction of the toll.

beyond these limits, and the increase of the quantity manufactured for the purpose of satisfying this additional demand, will ultimately compensate the revenue for the increase in the rate of duty. The mutual interest of the manufacturers and the consumers in this state—the advantages to the business intercourse between our citizens and the north and west, resulting directly and indirectly from our ability to supply these regions with this important and necessary article, and the ultimate effect of this increased demand upon the public revenue, considered in reference to the tolls on the canal, as well as to the direct duty on the salt, render it expedient, in my opinion, to bring the reduction to the lowest constitutional limit."

Here I must be permitted to observe, that it is impossible not to pay a tribute of respect to the "empire state," for determining to redeem its debt, at the market price, instead of waiting till the period fixed by law for its redemption.—The commissioners say, "it has greatly facilitated their operations in cancelling the debt;" but it has had another and still more important effect—*it will facilitate other loans and reduce their interest.*

And if we pursue the subject still farther, and study it as represented in the report, when it speaks of the result of the diminution of the freight on lead, we shall discover the folly of all restrictive legislation. Indeed, the whole course and progress of New York, since the illustrious Clinton projected "the great ditch," contains volumes of instruction on the interesting question of national prosperity. That state has expended, in principal and interest from fifteen to twenty millions of dollars, and it has reaped an hundred fold profit. This may be deemed a wild and ranting assertion; but provided there are means of estimating, even in a loose manner, the *whole* wealth of New York before and since the time of Clinton, the writer has little doubt his estimate will prove correct.

A discussion of the question forcibly, very forcibly, reminds him of a paper published many years since in the Aurora, entitled, he thinks, "*The State of the Nation,*" the object of which was to prove that the maxim of Franklin, of "saving the pence and the shillings, and leaving the pounds to take care of themselves," had, in far too great a degree, been adopted by the United States, in its book of Political Arithmetic. At least, this is the impression, after the lapse of a long period of time, which it has made on the writer's mind; for, in political arithmetic, two and two do not make four. Look at Virginia, with the *precept* of the first man of his age; and New York, with the *example* of one who, though great, could bear no comparison with the illustrious Virginian—and the *actual* situation of the two communities will speak volumes and prove the fact.

Mr. Duane also published a paper entitled, "Samson among the Philistines," the republication of which would probably render great service to the community.

"TERRE HOUILLE" OF THE CHESTERFIELD COAL MINES.

To the Editor of the Farmers' Registér.

Manchester, Va. 2d February, 1834.

I have to acknowledge the receipt of two sheets of the ninth number of the Farmers' Register, containing the article on the proposed mineral manures, together with the observations of Professor Blættermann and N. Herbemont, Esq.; and from the description given of the "*terre houille,*" would say, that the *slack* (or fine) coals of our mines, which are not merchantable at present, appear to be of this quality—though they differ in some respects. They take fire by spontaneous combustion, after lying in heaps for some time, and burn with very little or no flame; they contain a large portion of alum and copperas, particularly the latter, and evidently cannot be useful as manure, before being calcined. Small portions of salt petre are also noticed in it, while it possesses a large portion of sulphur. Experience has proved, that coals in a state of nature are injurious to vegetation, while the ashes are beneficial; and on some soils, to a very high degree. I am convinced, that nothing is more beneficial to fruit trees, than taking away the earth near the surface, about the roots, and supplying its place with coal ashes. This is an admirable remedy to prevent the worms from destroying the peach trees; and by a mixture with calcareous or other earths, may doubtless be found extremely valuable. Our rail road passes through several extensive strata of marl, or clay of variegated colors, soft and soapy in appearance, evidently containing some valuable properties; and as it is on the line of the rail road, where considerable excavations were made to obtain the level, it might be obtained in great quantities, and transported to the river at comparatively small expense.

You have promised to visit our mines, and I have anticipated much pleasure and information from the developements you might make.

C.

[The foregoing confirmation of the great similarity, if not identity of the "terre houille" with that kind of coal in our mines which is so abundant, and has been considered so worthless heretofore, is the more valuable because furnished by one, who in practical experience, and extent of observation on coal mines, is surpassed by few in this country. The objections urged by C. to the use of this substance as manure, on account of the alum and copperas contained, are supported by theory as well as by experience. Copperas is certainly a poison to soil, and it is believed that alum is also. But both these are *sulphates*, the first being a combination of sulphuric acid with iron, and the second of that acid with alumine (the pure matter of clay)—and if calcareous earth is mixed with these salts, they will be decomposed, and gypsum formed, by the sulphuric acid uniting with the lime: the poison would be destroyed, and a most valuable manure formed—and indeed, these substances, which are so noxious, would serve to give the best ingredient in the whole compound. This object alone, would be sufficiently important, (supposing the remaining portion of the "terre houille" to be of any worth as manure,) to induce the carriage of calcareous manures from a distance; and still more from the marl which C. supposes to be found in the vicinity. Of the correctness of this supposition however, we shall entertain doubts until the earths in question are examined by chemical tests. Altogether, this subject, which we were at first prompted to investigate, more by idle curiosity, than any reasonable prospect of arriving at useful results, rises in interest and importance: and there seems good ground to hope that, in some manner

or other, the coal mines of Virginia will furnish a new source of fertilization.

The two following communications on the same subject, have been received since writing the foregoing remarks. The last extract is from one of the most successful practical farmers in Virginia, whose name we hope to be hereafter authorized to use, and in connexion with more extended communications.]

REMARKS ON MINERAL MANURES.

Prince Edward, 1st Feb. 1834.

The printed sheet containing an account of Mr. Hollert's manure, &c. has just come to hand, for which I thank you much. I have little doubt, but that we have both the *terre houille* and the *houille grasse;* but much time and money may be consumed, before we have them sufficiently under our control, to convert them to useful purposes. I am now writing by a fire, made partly of *dead coal;* it burns slowly, with a glowing heat, but is not inflammable. Lime here is very costly, however; and its scarcity may create a barrier to making Mr. Hollert's manure. I think with you, that lime, with its combinations, constitutes the chief value of the Dutch and Belgic manures, so far as permanency of effect is concerned. It may be the case, that nature has supplied a sufficiency of this, to render an artificial admixture unnecessary. I saw but little appearance of lime at Mr. Flournoy's: but on my own land I never find a small vein of *dead coal*, without discovering clay marl in its vicinity—and in the coal stratum itself, there is usually a seam of selenite, some of which you have seen. I had a cut made across one of these strata a few days since, about six feet deep, and found a seam of selenite, from one to two inches in thickness, of the most firmly impacted and hardest crystals I have ever seen. A plate of it, a foot wide, would bear its own weight, when held by the edge. The veins of coal on my land are generally too thin to furnish much manure about their outrunnings. There probably are thicker veins at a much greater depth. But besides the *dead coal*—which has probably been in a measure divested by lime of its sulphuric acid—there are other materials about my land, which I think, in a slight degree, contain lime and gypsum. Much of the sand stone and slate in the banks of the gullies, is covered with a white efflorescence in dry frosty weather, and much of these matters will effervesce with acid. Wherever this appearance is exhibited, clover, particularly the white, grows luxuriantly in the gully below, and sometimes even in the crevices of the rocks. This white efflorescence I take to be gypsum. It does not effervesce with acids, when collected, but the rock from which it issues will, though very slightly. If any mode could be discovered of converting these rocks into manure, the benefit would be great; as in quantity, they are inexhaustible. They moulder on exposure to the atmosphere. But if the lime in them be the only manuring principle, they might not be worth the quarrying and removal.

The strata in which I discover most calcareous matters are, 1st, laminated beds of coal slate, having its *lamellæ* curled and glossy, like some of our best bituminous coal; 2dly, strata of glomerated sand stone, the balls closely impacted, formed with concentric layers, and having rich calcareous earth in the interstices, and sometimes between the *laminæ*. These balls are from three or four inches to a foot in diameter.

Some years past, I observed, that what is called schistus or coal-sill, in the "Edinburgh Farmers' Magazine," was there much recommended as a manure. Ever since, I have hoped, that in some way, the accompaniments of coal might be rendered useful to all living convenient to coal regions. The account in the Magazine was too vague to give any understanding of the material, or of its *modus operandi*. A way seems to be opening up for rendering these matters of incalculable benefit to the world.

I have for some time been groping my way among these things, occasionally gathering light from the pages of the Register. How much might Virginia be benefitted by the labors of a scientific geologist? I was much pleased to find a confirmation of the benefits of hornblende in the letter of Mr. Browne to our Governor. I think, however, it is more probably its lime, than its iron which does the good. It is very pleasing to see chemistry, mineralogy and geology lending light and aid to agriculture. I believe it was Lord Kames who was much ridiculed, for imagining that the time might come, when manure could be so concentrated, as to be carried, to a valuable extent, in a snuff box. Who knows but that, in this age of discovery, his lordship's notion may be verified? Chemistry has already produced amazingly concentrated extracts from Peruvian bark, opium and other medicines. Indeed, calcium, the base of lime, has been discovered. And should a cheap mode of extracting it be found, our cismontane gentry may fill their snuff boxes, and return from their annual visits to the springs rather more pleasantly, than with the emptiness of pocket heretofore experienced.

In the course of this winter, I have found a blueish clay, which I suppose to be disintegrated slate, containing a more liberal supply of selenite than I have before discovered on my land. This is near the bottom of a deep ditch, in a place so excessively miry, as to defy my curiosity and enthusiasm in such matters; and I am compelled to wait for drier weather, before I can ascertain whether there is enough selenite to be valuable. I am often on the look out for the gypseous earth of your region. This clay may be essentially the same, but very different in consistence, being almost as unctuous as tar, when wet. I was led to examine it by some streaks of a peculiar *caw-blue* color.

The negroes on this farm were for a long time permitted to burn the old field pines into charcoal, for the use of the neighboring smith shops. The scites of their old kilns are much richer than the surrounding land, probably from both the burnt earth and the coal dust—chiefly the latter, I suppose. In spreading marl, I have directed it to be more liberally applied on such spots than elsewhere, imagining that the lime might aid in the decomposition of the coal. These spots have much improved in appearance since being marled. I contemplate spreading much of this coal dust, of which I have a great quantity, and mixing it with marl, in my further efforts to marl my land.

There is a gully here, the bottom of which I have seen covered for about an inch deep with a very white salt, and for a considerable extent. This frequently occurred in weather favorable to

rapid evaporation after much rain. The salt was mixed with something which produced bitterness; I suppose the sulphate of magnesia. Stock were, however, fond of it. I have but little opinion of salt alone, as manure; in combination with other matters, as in *sea ashes*, it may be valuable. This gully is now nearly filled, but salt may still be found in suitable weather, not only whitening the ground, but crystalizing on the grass, and killing it. There is a horizontal layer of very black mud a little below the surface of its present bottom, without the taste of salt, but of a disagreeable smell. There is little doubt, but that this is produced by the chemical agency of salt and some other matter with which it meets; for I invariably find it accompanying the salt in various parts of the plantation. Would this and the saline mud about it make manure?

WM. S. MORTON.

COAL ASHES AS MANURE.

To the Editor of the Farmers' Register.

Powhatan, Feb. 2d, 1834.

Our friend ——— handed me a few sheets of the Farmers' Register which you had the goodness to address to me, in which the value of refused coal is set forth as a manure. I have for some years been thoroughly convinced of the beneficial effects of coal ashes when applied to land, and I have used them very advantageously in that way. In October last, when seeding my crop of wheat, I hauled out a parcel of the above description, and top dressed, (the way, by the bye, in which I use all my manure,) a very poor hill side. The effects previous to Saturday's heavy fall of snow were most astonishing—distinguishable at the distance of half a mile, for its superior growth, although surrounded by very good wheat, heavily top dressed at the same time, with farm pen manure.

I consider coal ashes as decidedly superior to any thing I have ever yet seen for lightening stiff soils. Our coal pits, and cities where coal is used, would furnish large quantities of this valuable manure.

EXTRACTS OF PRIVATE CORRESPONDENCE.

Sussex, 17th January, 1834.

* * * As the Gama Grass seems to excite some attention and inquiry through the Farmers' Register, I also enclose you a few of the seed which I have found on grass growing on my farm, on the Nottoway river, in the county of Sussex, and have but little doubt it is the same kind of grass spoken of by some of your correspondents under the above title: I have never seen any other grass known to be the gama grass; but the seed and general description, correspond in so many particulars, that I am satisfied it is the same grass which I find on my farm. I have observed the very luxuriant growth of it for the last eight or ten years, but set no value on it, as it appeared to be a single, (though large) bunch of coarse grass, growing by the side of an old fence, just at that point where the alluvial black sandy soil comes in contact with the yellow sandy highlands. Of its origin I know nothing; but as it was discovered in a single bunch about one quarter of a mile from the river, and as the surface on one side of the spot where it grows was formerly covered (during winter) with water, I am inclined to suppose the seed might have been deposited by some wild fowl; but be this as it may, the fact of its flourishing finely, is conclusive evidence of the capacity of the soil and climate to mature it to great perfection. As it will be enclosed in the field I cultivate this year, I will pay some attention to it, so as to ascertain how often it can be cut, and what number of pounds are obtained from each cutting.

Halifax County, N. C.

There are ridges running through our second low grounds (of Roanoke) not covered with freshets, the soil of which is light and porous, and when manured, will not hold it long. Will marl or plaster of Paris, make it more close and retentive? I have tried the plaster of Paris by rubbing my cotton seed with it: in dry years the benefit is very perceptible; but in wet seasons, there is none. There is a bed of shell marl on the river about fifteen or twenty miles below my plantation. What can I afford to give per bushel for it and boat or flat it to my farm that lies immediately on the river? Would it make the light land above named more firm, or looser? Some years past I cleared a pond in the winter, and hauled the wood along one of those ridges: to my surprize, the row of corn immediately in the cartway, and one on each side, had the appearance of being highly manured. If this was produced from the earth being made more solid, and I cannot account for it in any other way, might not a machine be fixed without much cost, to ram such land, and in that way improve its texture?

[The accidental experiment above mentioned tells plainly of the great want of closeness in the soil. Marl certainly will in some measure remedy that defect, even though the manure may be principally composed of sand. Information as to the cost of transporting marl is furnished in an article published in No. 9; and of the benefit to be expected, some satisfactory statements may be found in a letter of Wm. B. Harrison, Esq. in No. 7, on marl, and in other articles on lime.]

Northumberland, Va. Jan. 24th, 1834.

It would be pleasing to me if I could give you a favorable account of our agriculture. A stranger, if passing through some parts of our county, would say it was abandoned and given up, or that it had been visited by either "war, pestilence or famine." The fact is, we are indolent, and want energy to direct and carry on farming as our eastern and western friends do. From our local situation, we ought to improve. Many are engaged in the wood business, and lands on the waters are valuable, as they will afford from thirty to fifty cords per acre, which when well seasoned, sells from $1 25 to $1 50 the cord. I think the wood business here, much retards the farming interest. On the waters we have many facilities for manuring—say Indian banks, oyster shells, bay or river grass, which is abundant in some places; also, fish is an excellent manure.

Halifax Co. Va. Dec. 13th, 1833.

I have just received the No. for this month, and do heartily thank you for the entertainment and instruction I have received from it. I live in a tobacco making region, and of course, many of your

plans for improvement, and methods of cultivation are inapplicable to our situation—but the grand features of our systems are alike, and especially the abominable errors which, like original sin, are handed down from father to son among us, I see also disgrace and impoverish the farmers of your part of the state. I had, in my ignorance, thought that we "planters" were the only people who wore their land out with a rapid succession of crops, and then put them under the hoof for recovery: but I find that I am mistaken, and that other parts of the glorious Old Dominion exhibit similar proofs of agricultural philosophy. I am both "a young" planter "and a bad" planter, and therefore read with self-application the article in your last number, "*On Draining*," and determined to adopt some of its suggestions, though I could not approve *in toto* of all the sentiments advanced in it.

SUBSTITUTE FOR HOPS.

Prince Edward Co. Jan. 14th, 1834.

* * * Such a work cannot fail in being extensively circulated and universally read; nor can it fail in correcting the rude and butchering manner of farming almost universally pursued in this section of Virginia. I was highly delighted in finding so much in the Register calculated to interest ladies. My wife remarked the other day, that she had got fully the worth of the subscription already. I trust you will, in every number, have an eye to that; and as I have lately become acquainted with a fact which may be convenient to them at some period, I will briefly mention it on this occasion, and if it be indeed new to you, (as it is to me,) you can use it for the interest and instruction of the ladies, if you see cause. It is the substituting the Life Everlasting (the botanical name I do not know,) for hops, in making yest.

The yest is made of the dried leaves and flowers just as yest is made of the hop, and used in the same way. I am informed by those who have used it for some time, that bread is not as apt to become sour, and the flavor is finer than the hop bread. I have no doubt its qualities would be greatly improved if it were cultivated, and the leaves and flowers gathered as soon as they were ripe, and dried in the shade.

SILKWORMS.

Philadelphia, Jan. 21, 1834.

The art of raising silkworms is not so difficult as people imagine. It may be reduced to a few rules. Give the worms a sufficiency of air, spare of food, and above all things, keep them clean and dry; dirt and dampness are death to them. This is the whole art, with a few little matters that experience teaches. As to the mulberry, any one can raise it who can raise an apple or a pear tree. The writers on these subjects are too fond of displaying their knowledge, and raising trifles into things of importance. The simplest treatise, I think, is the best.

I have before me a little Italian manuel, in which I find what follows, with which I shall conclude this letter: "The poor country people who often deprive themselves of their only chamber, in order to raise their silkworms, must rest contented with what they have. It sometimes happens, however, that they succeed better than those who have the best accommodations."

Prince Edward, Jan 21*st*, 1834.

I have just learned that stone plaster has been ploughed up in Amelia in the neighborhood of the Stoney Point Mills. I forget the name of the owner of the farm. I had a small specimen which I gave yesterday to my friend ——— for you.

I was told at our court yesterday, by a gentleman of high respectability, (Dr. Paul C. Venable,) that a great deal of hay is made in Halifax county, of the volunteer gama grass which grows on the sandy low grounds of Dan river; and that towards the heads of the river, large meadows are raised of it, under the name of the *big fox-tail grass*.

GRAZING FARMS IN THE VALLEY OF VA.

Rockbridge, Va. Jan. 24th, 1834.

Being no farmer myself, I know no way in which I can promote the farming interest so effectually in this region, so highly favored by nature as a farming country, as by the circulation of your Register.

In the Valley below us, the farmers are pursuing a system of farming which I am anxious should be tried in this county. I allude to the wheat and stock raising, in connexion; buying three and four year old steers in the fall; feeding them during the winter on wheat straw alone; and in the summer, grazing in clover fields until midsummer, when they dispose of them at a profit of ten to twelve dollars per head. If you could prevail on some of those gentlemen who are pursuing it, to prepare for the Register a particular account of their system, it would be valuable information to your subscribers in this quarter.

* * I wish you would call on your correspondent "Marcus Porcus Brutus," for a description of the styes which he thinks should be used in raising hogs.

Albemarle.

Apropos of lime and marl—your book on calcareous manures, or rather calcareous earths as manures, has pleased me very much, and has rectified and fixed in my mind, certain vague ideas which I entertained, as a theory, on the manuring of land with lime, the efficiency of which I have fully demonstrated by practice. I happened to buy certain land, formerly in the possession of ———, about eight hundred acres in quantity, and so extremely poor, that a great many persons thought me an egregious blockhead to have given so much as three dollars and seventy five cents an acre for it. However, as a vein of lime stone runs through the whole of it, I, undismayed, began quarrying rock, burning lime, and throwing it on the land, to my heart's content. Now, after having pursued my plan for these five years, every field exhibits the appearance of rich bottom land, by the luxuriancy of the clover, oats, wheat, and even corn that grow on it. This improvement has indeed been expensive, for I have as yet made but small crops, as all my force was directed to one object, viz: that of raising clover in the first place; but I am afraid you will think me a proser, and therefore I shall conclude by assuring you of the high regard with which I remain your humble servant.

Prince Edward, 1*st Feb.* 1834.

Your Northampton correspondent inquires for gama grass seed, and Byefield or Swiss hogs. We received information on the subject of gama grass in this section too late to save any seed, and the very few preserved, would hardly be spared, I suppose, at any price. I know of no Byefield or Swiss hogs. The Rev. John Kirkpatrick of Cumberland, has hogs both of the Bedford and Chester breeds; the latter of which, I suspect, are nearly the same with the Byefield. They surpass any thing that I ever saw, in the shape of hogs, for beauty, rapidity of growth, and aptitude to fatten. Mr. Kirkpatrick procured them of Mr. C. Barnitz, near York, (Penn.) As an evidence of their propensity to be white, I will state, that I saw a coal black sow of the common breed, with eleven pigs, by the Chester boar, without a colored hair on one of them. I was told, a twelfth one had died before I saw the litter, as white as the rest. He has also some of Mr. Meade's Durham cattle, and a number of his improved breed of sheep. The latter yield a very uncommon quantity of wool, of a very fine texture; and being free from the crispiness of the merino wool, is much more suitable for home manufacture. To this gentleman we are moreover greatly indebted for the introduction of a great variety of fruit trees of the best qualities, and the improved taste for horticulture which has been recently getting up among us, much through his instrumentality.

For the Farmers' Register.

MANAGEMENT OF TOBACCO.

In a former number of the Farmers' Register may be found an essay on the Management of Tobacco, signed Frederick Oronoko: as every planter has a mode of managing this plant, different from that of his neighbor, I propose giving mine—leaving it for time and experience to determine which is right. If the following remarks should induce other planters to publish their plans, I think, by and by, we shall be enabled to pursue a much more systematic course in relation to its management, &c. than we have as yet arrived at. So without farther excuse, notice or apology, I commence first on the subject of SEED.

The best seed have a bright brown color—should be selected from plants well matured, preferring the more forward plants, with leaves well shaped. My plan has been to turn out two or three times as many seed plants, as would be actually necessary to seed my beds, permitting say thirty or forty pods to be matured by each plant; and from these, select such as are least objectionable. As soon as the pod becomes dry, the seed should be gathered, well dryed in the shade, and carefully secured until December or January, at which time you may begin to prepare the beds or patches. For early planting, select a hill side presenting a south eastern exposure, somewhat sandy, rich, and quick; for late planting, a low or flat situation is preferred. The situation being fixed upon, and the ground in what is generally called good working order, burn hard, hoe or coulter deep, guard against turning up the clay or under soil, rake well, sow thin, (a common pipe bowl full, I consider rather thick for a bed four feet wide and sixty feet long,) tread close, cover well, and manure heavily with well rotted dung. The best time for manuring is as soon as the seed are sown; then repeat when the plant comes up, and so on every ten or twelve days, till the plant is of (or nearly) a sufficient size to plant out.

The crop having been well worked, soon arrives to that stage called TOPPING; and many fine crops have been much injured from a loose and negligent habit in this operation—for if you top too high, it is unreasonable to expect a perfect plant; if, on the contrary, you top too low, many of the lower leaves will be much injured by rubbing against the ground. Close observation and strict attention can only direct the planter how this should be judiciously done. The only general rule within my observation for determining when a plant is rightly topped, is when the top leaves are of the same size with those of the bottom, and this rule is only applicable to full grown plants. Topping too high is more injurious than topping too low: for by high topping, tobacco is made thin and chaffy—whereas, by topping low, much of the crop will be strong and rich, which will compensate the planter for the rugged dirty leaves always found on plants topped too low. The practice in this neighborhood is to *prime* in the earlier part of the season five or six inches high, and top to eight or nine leaves. Some go as high as ten leaves; but under ordinary circumstances, eight leaves appear to be the common standard. As the season advances, the priming should gradually fall to three or four inches, and the topping to four or six leaves.

CUTTING is the next thing to be attended to; and the only thing necessary here to state, is the importance of cutting *only* that which is perfectly ripe.

There is a practice with many overseers to get as great a number of sticks cut at the first and second cuttings as they possibly can, in order, I suppose, to afford an opportunity (even at the employer's expense,) of boasting a little at the next court, muster, or warrant-trying day. The only way to guard against impositions like this, is the personal attention of employers; and until this is done, we look in vain for any great improvement in our agricultural operations. I would here add the impropriety of cutting on Wednesdays or Thursdays, especially in the month of August or first of September; it being often the case that a house of tobacco is very much injured from this circumstance alone. If you cut on Wednesday, your fires must commence Friday, which must be very moderate until Saturday 10 or 11 o'clock, from which time till night is too short a period to effect as perfect a cure as the tobacco requires; and by Monday morning, especially in warm moist weather, the sap begins to flow, from the stem which is green, into the half cured leaf, producing a reddish appearance, wholly destructive of its former beauty and brilliancy.

In warm weather, we hang from eight large plants, to ten small ones, on each stick; the sticks should be carried immediately into the house, and placed eight or nine inches apart. The sticks having been regularly arranged throughout the house, the process of CURING then comes on.

My practice for several years, with but little variation, has been to regulate the sticks, the day after cutting and next morning. Commence with small fires, so as to raise the thermometor to 90°; this heat should be continued from thirty six to forty eight hours, which we call the warming or

preparatory fire: (then, small yellow tobacco when cut, requiring a shorter preparation than large, thick, green tobacco;) the heat should then be raised gradually 10°, and continued four or five hours—thus continuing to raise the heat throughout the whole process 10° every four or five hours until the thermometor reaches 150°, which is called a curing heat. The continuation of this heat depends much on the state of the atmosphere, as well as on the size of the plant: it should, however, be continued until the whole plant is thoroughly cured. As soon then as the tobacco comes in order to handle, you may remove it to some other house, hanging it as thick as you can conveniently press the sticks together, where it will remain in perfect security until you are ready for STRIPPING.

In the month of November you may safely begin to strip; and much care should be used in making the different qualities, as well as tying the different bundles; the "tie leaf" should be stemmed, which looks much neater than to have one half of the leaf hanging down the bundle. A good hand will tie from seven hundred to one thousand bundles in the day. The tobacco stripped during the day, can be easily packed down in bulk at night, on a platform raised eighteen or twenty inches from the floor, where it may remain until winter is nearly over, when it must be re-hung in order to get it in PRIZING ORDER.

Much depends on the order for prizing. The stem must be perfectly dry: never strike or take down tobacco for prizing, unless the wind is at some southern point—and it should be taken down as dry as you can possibly handle without very much breaking it. When down, it should be well covered with fodder or leaves; if the "season" continues, you may pack it in bulk as straight as possible for prizing—the hogshead weighing from sixteen to eighteen hundred weight. Now, Mr. Editor, 'tis said that theory without practice is like a purse without money; so I'll give you a few extracts from my notes taken last summer during the curing season.

"15th Sept. 1833. First barn—tobacco very ripe—weather hot and dry—cut Friday—commenced firing Monday morning—thermometer 90° at 9 o'clock—12 o'clock 106°—process too rapid—half past 3 o'clock, 110°—fired all night—Tuesday 9 o'clock, 120°—3 o'clock, 150°—fired all night—Wednesday 150°—fired all night—Thursday 150°—Friday 150°—fires kept up irregularly, and stopped in the evening. High wind each day—thermometer at back side of the house." When this tobacco came in order to be examined, I discovered that a small portion was somewhat injured by the fires being too strong in the commencement, as seen above.

"16th Sept. 1833. Second barn—tobacco ripe—not very ripe—weather hot and dry—cut Saturday—commenced firing Monday—smoked all day at 90°—Tuesday the same half day—Tuesday evening thermometer 100°—Wednesday morning leaf half cured on the lower tier 140°—fired half night—Thursday 146°—Friday 146°—fired half night—handsomely cured—thermometer 3 feet from the door 5 feet high—windy each day.

"22d Sept. Third barn—dry weather—cut Saturday—not very ripe—commenced firing Monday morning 90°—continued all night at same—Tuesday 9 o'clock 110°—tails curling—tobacco looks very well—Wednesday 120° at 9 o'clock—low tier leaf nearly cured—Thursday 150°—fired all night—Friday 160°—fired till bed time." This house, on examination, was very well cured.

I forgot to mention in the proper place that my barns are made as tight and close as possible. I do not, however, think that the roof should be very close; my barns are covered with oak boards, and are generally open enough to let off the smoke and vapor as fast as they are formed. Some of my neighbors have windows made just under the comb of the house.

If you think proper to publish the above in the columns of the Register, do so; if not, lay it aside and give us somthing else. By so doing, you will oblige

YELLOW PRYOR.

ENORMOUS LOSSES CAUSED BY THE FENCE LAW OF VIRGINIA.

To the Editor of the Farmers' Register.

Brunswick, Feb. 18th, 1834.

Sir,—If I mistake not, (for I have not the work to refer to,) John Taylor, in his Arator, estimates the time occupied on each plantation in repairing the fences, at two months; and I am convinced that much of this time might be profitably saved, to be devoted to other objects, by amending our law of enclosures. I must beg leave to submit the following inquiries to the public, through the medium of your invaluable columns. I should be happy to furnish a correct answer to them myself, but that cannot be done with any degree of accuracy, as we are totally destitute of agricultural statistics.

How many bottoms are turned out to be trampled into mortar, producing neither corn nor grass, because they are too long and narrow to be fenced?

How often has the landlord to give up his lands rent free to his tenant, upon condition that he will "do up" the fences?

How often is a plantation objected to by one wishing to purchase, and what proportion of its value is lost to the owner, because though there may be a great deal of good land on the tract, yet he would be compelled to fence in too much poor land in order to bring the good into cultivation?

How many tracts of land are now valueless, for want of a sufficient quantity of timber to keep up the immense enclosures?

How often does he fail to get a tenant altogether because no one will take his land even upon the foregoing hard condition?

What proportion of his rents is lost every year on account of the difficulty of repairing the enclosures?

How much good land is now useless, in detached parcels, being separated from the body of the tract by a stream or road, on account of the immense labor necessary to enclose it by itself?

How much valuable tobacco land must now be continued in forest, to produce timber to repair our fences, which under a better law of enclosures, might be brought into cultivation?

How many rich, but small parcels of meadow land, lying on the borders of our crooked streams, are neglected, because the fence on the bank will rot in a few years, or be carried away by the freshets; or because the fence cannot well be made to follow the serpentine course of the stream, and if it be made at all straight, it would cut off so many nooks and corners, as to leave the balance unworthy of regard?

How great a loss is sustained in this, that we cannot clear 20, 50, or 100 acres of good land, here and there, where such may be found, and leave the poor ridges to produce fire wood and a small portion of timber, but must take it as it comes, high and low, rich and poor, in order to get our fields in a body for the convenience of enclosing them?

The rich man A, with 1000 acres of land and 40 hands, requires say one month to repair his fences: the poor man B, who is worth but one fourth as much, with 250 acres and 10 hands, must labor two months to repair his. That he must, is susceptible of mathematical demonstration—and the poorer he may be, the larger proportion of his labor has he to apply in this unproductive operation of fencing.

How many thousands of poor people who own small pieces of land, and who own, or could easily procure an ox and plough each, and who could with these means make a comfortable subsistence for themselves and their families, are deterred, improvident as they are, from making the glorious attempt, (I say *glorious*, as it might save them from the poor house or the penitentiary,) by finding their labors doubled by the unprofitable operation of fencing their respective little patches, or by contemplating the laborious task of cutting and mauling rails, which must be performed at the most inclement season of the year, or because they have not the team necessary to haul their rails to the grouud, after they have prepared them.

The great number of rails to be hauled renders it necessary that the farmer should keep a cart or wagon, and twice as many oxen as would be necessary for all other purposes, and even with this double team, so painful is it to the feet to draw on hard frozen ground, and so laborious is this work over land recently thawed after a severe winter's frosts, or which has been lately ploughed, that it becomes a delicate question about the middle of February, to ask a farmer "how his steers hold out." Sometimes, with the blessing of God, (and I know no instance in which his goodness is more signally displayed,) they *do* "hold out," and the shift is fenced so as partially to protect the crop from the ravages of the hogs; but sometimes they do not "hold out," and consequently a large proportion of the ensuing crop is destroyed by the hogs, before it attains maturity. Yes sir, strange as it may appear to the inhabitants of all other countries, it is nevertheless true, that that portion of the year which elsewhere is devoted exclusively to taking care of the stock, and making manure, is consumed with us in hauling rails, which frequently renders our oxen totally unfit to carry out, in the spring, the little manure which unavoidably accumulates around us.

It may be worthy of inquiry, how much better, straighter, and shorter our public highways might be made, if our law of enclosures were altered. For, melancholy to relate, even our public highways are made to yield to the overwhelming consideration of fencing. I have been amused with the various curvatures described in some of our applications to the courts for orders to open new roads. For by way of rendering the measure acceptable to the court, and to avoid the multiplication of fences, we consent that the new highway shall be opened "around Mr. such a one's fence, thence back through Mr. ——'s lane, and thence around Mr. such another's fence," and so on. If I am asked, as I frequently am, what we should do with our stock if the law of enclosures were altered, I answer that we can do, what we certainly shall be compelled to do in the course of a few years, on account of the deficiency of timber, whatever that may be: that half a dozen neighbors can easily unite in purchasing and enclosing commons for their stock—and that by devoting the time and labor, which is now consumed in fencing, to raising and carrying out manure to be applied to our grass lands, we can grow more grass upon 10 acres of land, than is now produced by 200 of our trodden and worn out old fields. And lastly—that we can at least do what the inhabitants of all other countries in the world do—and surely the superiority of our stock over the stock of other states and countries is not so excessively great, as to attach us inveterately on that score to our old system.

In fine, our law of enclosures as it now exists, is a most intolerable nuisance to by far the largest, most wealthy, and populous portion of our state. I would suggest the propriety of altering it so far at least as to compel every one to keep his hogs in an enclosure. The effect of this alteration would be to enable us to adopt the use of live fences, which would save us a vast deal of labor. At present we cannot use them, as there is no sort of hedge that can resist the attacks of a thin, lean, tough-hided and hungry old sow.

PHILANDER.

[It is highly encouraging to our efforts to put down the monstrous evil which we all suffer from our legal policy respecting fences, to find so many correspondents either approve or sustain the views, already presented in the Farmers' Register, in denunciation of this system. The discussion, so supported, cannot but lead ultimately to a suppression of the evil: and if all those who think with us on this subject, will use their influence, a just and proper law of enclosures will be one of the first great gains from the exchange of opinion, and lending of mutual aid among the farmers of our country.

We lately had the pleasure of viewing the operations of an enterprizing and intelligent farmer from New Jersey, who has been induced by the low price of our land to purchase and settle a large estate on the lower part of James river. The most admirable care of his live stock was evident, and none enjoyed more of this care, or repaid it with more profit, (as the owner believed,) than his hogs. Nevertheless, they were always confined to styes, and neither grazed the fields, nor derived the slightest benefit from the large body of "woods range," belonging to the farm. The fields (which were small, as is usual in the northern states,) were separated by neat, strong and durable post and rail fences, which though only three rails high, were as effectual in restraining all other cattle than hogs, as a "lawful fence"—and much more effectual against fox-hunters. But his outside fence was necessarily made (to suit the law and his neighbors' hogs,) "ten rails high, staked and top-logged." The owner was asked what estimate he placed on the difference of the fence law in New Jersey (where hogs are not permitted to go at large,) and in Virginia—and his answer was, that the whole purchase money paid for his estate was not a

greater amount than the value of the difference. But if this estimate was too high, reduce it to any extent that can be asked for, and it will still be found that our fence tax is heavier than all others paid by the people of Lower Virginia. All that we pay for our 90 days' sessions of the Legislature, the support of public education, and for all the roads and canals in progress, does not equal the whole amount of what we individually pay in the making of fences, merely to enable the hogs of other people to live (or perhaps to starve) on our uncultivated lands. There would be some compensation for this system, if we gained in pork what we pay in fencing—even though the hogs of A gained what was lost by the land and labor of B: but it is notorious that there is no considerable gain even to those persons who gain all; and the immense annual importations of hogs for slaughter, sufficiently prove that the whole management of hogs in Virginia yields no nett profit, and but an inconsiderable gross income, to the community, notwithstanding all the enormous cost incurred.]

EXTRACT ON SCHISTUS.

To the Editor of the Farmers' Register.

Richmond, March 15, 1834.

Dear Sir,—The articles in your last number relating to manure from coal, Dutch ashes, &c. brought to my recollection an account published a long time since in an agricultural magazine, printed, I think, in Edinburgh, on converting the bituminous schistus found in coal mines, into a gypseous manure, by mixing it with lime. The book had been lent me, and being possessed of coal lands, I intended to try the experiment, and for that purpose had a copy of the article taken. It is with regret I am obliged to say that I neglected from time to time to carry my purpose into effect, until I had nearly forgotten it. On seeing these articles in your last number, I searched among some old papers for the copy from the agricultural magazine, and rather unexpectedly found it. You have it enclosed. It is in some parts almost illegible, but if you can make it out, you can publish it if you see fit.

As I understand the writer, he considers the bituminous schistus to consist chiefly of clay impregnated with vitriolic acid, and that on its being mixed with lime, the vitriolic acid combines with the lime and forms gypsum. The greater part of the mass being clay, it would seem better fitted for light than stiff soils.

Though no limestone has been found in the coal region of James river, it is so near to Richmond, that I should think that by attending to the market, and bringing lime at the cheapest rate, this manure might be used to advantage in the neighborhood of the coal pits: this, however, is matter of computation and experiment.

Perhaps I may be as negligent as I have hitherto been in regard to this matter; but I intend at present to try the effect of this preparation, and if the result should be worth your attention, it shall be communicated to you.

The word "*houille*," used by your correspondents, signifies pit coal in France, or at least in French Flanders and Belgium. In some mines there are bodies of this substance that contain so much sulphur and iron as to be unfit for domestic use. This when exposed to the weather, takes fire spontaneously, and I think it probable that the ashes which your correspondents speak of, are produced from this kind of coal.

I have myself tried coal ashes as a manure, on a pretty large scale, chiefly on stiff river low grounds, and with some degree of success—but doubt whether they were worth much more than the cost of carrying and spreading. They were collected about coal works, and had been exposed to the weather, the greater part of them, for a number of years.

In the 1st volume of the Memoirs of the Philadelphia Agricultural Society, (1808) Appendix, page 33, is a communication from the late Chancellor Livingston, giving an account of his having seen, in an excursion from Paris to Flanders, beds of "*pyrites*" burnt for manure. Perhaps what he took for "*pyrites*," was the "*houille*" spoken of by your correspondents.

With regard to peat ashes, which your correspondents speak of as being extensively used as a manure in Holland, they are much used in England, Scotland and Ireland, as well as Holland; and as peat is generally, if not always composed of bog earth, full of vegetable fibres, their fertilizing properties would seem to be mainly the same as those of wood ashes, than which there are few better manures.

In those moist climates, a large proportion of the vallies or low level grounds that have water stagnating or running through them, are for some depth covered with peat earth. In our comparatively dry climate, I apprehend peat is not often to be found; but wherever it can be met with, I have no doubt it would prove a valuable manure, if it would bear the expense of cutting, drying, burning, and transportation. This could only be ascertained by experiment. I should think this matter well worth your attention and that of your correspondents.

Yours respectfully,

J. W.

Extract taken from the Farmers' Magazine, volume 14, *page* 286.

Schistus is every where an attendant on coal, forming the roof of many seams. It is composed of argillaceous earth, sulphurate of iron, with a small portion of alum. It falls, in length of time, by exposure to the atmosphere. Lime immediately decomposes it, and forms it into gypsum.

In the course of working the coal mines near to the town of Workington, prodigious banks of schistus had been accumulated. To remove these was impracticable; to level them was supposed to be a further destruction of ground.—Thus many acres were lost. In order to render them, if possible, of some service, an experiment was made to see if they would vegetate grain. After repeated ploughings and liming, one of the banks was sown with wheat, and in the spring with clover. Contrary to all expectations, both crops turned out abundant. This led to the mixing schistus with lime, in the proportion of six to one, as a manure for light soils, which was found to answer admirably. The banks have been all levelled; and, with the exception of two fields now under improvement, are as productive as the adjoining ground, letting at the rate of £4 an acre; previously not only of no value, but a great deformity to the appearance of the country.

Sixty bushels of lime would mix three hundred and sixty of schistus, which may weigh between

eleven and twelve tons. The expense of leading and mixing, where lime is so cheap, operates to prevent the farmers profiting by it. It has, however, been tried with success by several persons. There is a considerable difference in the quality of schistus; that which has the greatest proportion of argillaceous earth is the best.

I have understood that schistus has been exported from Fifeshire as manure; though I am not informed to what part it is sent.

There are two fields under wheat at the present moment, which are extremely promising; these were almost entirely covered with schistus. After ploughing, they were limed with forty Winchesters per acre.

I am told that one of the crops has been sold for £14 the statute acre.

[The following communications were sent to be published in the last No.; but the bundle in which these and several other of the foregoing pieces were enclosed, was mislaid, and was not received by the publisher until recently.]

AGRICULTURAL INTELLIGENCE—REPORT OF SEASONS, CROPS, &c.

To the Editor of the Farmers' Register.

Charlotte Co. Va. Dec. 22, 1834.

You request in your last No. that the readers of the Register will furnish concise accounts of the state of the crops, seasons, estimated products of the crops secured, &c. I take pleasure in giving you such an account as my inquiries and observation enables me to furnish. My remarks are intended to be applicable only to a district of country bordering on Staunton river, between the mouth of Falling river in Campbell, and Little Roanoke in Charlotte, and extending out into Halifax and Charlotte, about twenty miles on each side of Staunton river. The tobacco crop in this district is generally much shorter than usual; the quality of the tobacco that grew on Branch and Creek flats is fine; but owing to the severe drought of the last summer, the highland tobacco is light and generally destitute of oil. The tobacco that grew immediately on Staunton river did not generally come to its usual perfection owing to a high freshet in that river which occurred about planting time, and which left the lowlands in such a condition as caused a delay in planting much beyond the usual time, (I will here record a fact that may be useful to the readers of the Register at a future day.) The corn and tobacco that was replanted immediately after the waters subsided, without waiting for the land to dry, turned out much the best, particularly where the land was sandy.

The corn crop in the section of country alluded to, owing to the excessive rains in the early part of the year, the freshets, and subsequent drought, is unusually short, and is now selling for four and five dollars per barrel. The short corn crop extended as far as Clarksville down the river. Our wheat crop, which is now becoming an object with us, and which has increased for several years back, promises badly—owing to the freshet in the river, which damaged the seed wheat, and the cold fall, wheat has come up badly, and looks drooping.

Respectfully yours,

GEO. W. READ.

SEASON AND CROPS ON THE LOWER ROANOKE.

To the Editor of the Farmers' Register.

Scotland Neck, Halifax Co. N. C.

You desire your correspondents to report the seasons and state of crops in their neighborhood: in compliance with that request, I make the following report.

It was very wet here until June, and afterwards uncommonly dry. Our crops of corn on the Roanoke are unusually short, for fifteen or twenty miles above and below this place. Near Halifax and above, I understand they are somewhat better; below, as far as Plymouth, I understand they are about the same as in this neighborhood. The upland crops of corn were very much injured by heavy rains in April and May, and by the drought in July and August. About the last of May, we had a very high freshet in the Roanoke, which destroyed all sorts of crops on the low grounds: most of the land was again planted in corn, but owing to the severe drought, very little was made. Usually, I understand, there is shipped from the Roanoke from forty to fifty thousand barrels of corn. If the farmers use as much as usual, there will be none to ship this year.

Our cotton crops are over an average in quantity—the quality better than usual. Corn and cotton are our principal crops. Let me recommend to the readers of your valuable paper a practice pursued by most of our best farmers on the Roanoke, which I have never seen published in any agricultural work: I recommend it with confidence, as I have often experienced its good effects. If a freshet comes as late as May, or last of April, we soak our seed corn until it nearly sprouts, and as soon as the water leaves the earth, if the sign of the old hill can be seen, we drop the corn and cover it very shallow—the less earth you put on it the better, provided the corn is covered; if the old hill or check cannot be seen, we mark the land off again very shallow to prevent the water settling in the furrow. The corn will be up and growing in two or three days; and before the egg of what we call the "colewort worm," that is so destructive to young corn, can hatch and get of any size, the corn is too large for them to injure it. We then wait until the earth gets in a proper situation, and plough it as close as possible. Land covered by freshets, does not get hard as soon as when wet with a heavy rain. This method of planting will not answer in cool weather. There is a great deal of other land, besides the low grounds, infested with bugs of different kinds, that destroy the young corn. The method I pursue on such lands, is to plant it very early, in the usual way, if the earth is sufficiently dry: if not, I plough the land, and let it lie until warm weather and a good season come. I then immediately plough the land over again, soak my corn as above, and plant—(the sooner after ploughing the second time the better) and cover the usual depth. The way I account for the good effect in planting as above on the low grounds after a freshet is, that it has drowned all the bugs that were hatched, and before the other eggs can hatch, and the bugs get large enough to do any injury, the corn is too large to be hurt by them. In other lands not covered with water, if planted early, there has not been sufficient warmth to hatch the worms. In the latter, planting as above, the second ploughing covers them so deep, that if

DIARY OF THE TEMPERATURE AND STATE OF THE WEATHER, FROM DECEMBER 1, 1833, TO FEBRUARY 28, 1834,—OBSERVED AT SHELLBANKS, PRINCE GEORGE COUNTY.

N. B. The Thermometer kept in the open air, and in the shade. Where blanks occur, no observations were made, either in consequence of the absence, or inattention of the observer.

Fair, or sunshine, f—cloudy, c—raining, r—snowing, s.

DECEMBER.	Thermometer at Sunrise.	Weather.	2 o'clock, P. M.	Weather.	Twilight.	Weather.	Change of weather during the night.
1st	40°	c	°	f	44°	f	
2d	29	c	44	c	42	r	
3d	41	c	47	c	46	r	
4th	42	c	48	c	44	c	
5th	41	c	45	c	42	c	
6th	33	f	44	c	41	c	
7th	38	c	49	f	48	r	
8th	36	r	46	c	46	c	
9th	45	f	55	f	48	f	
10th	32	f	46	f	44	f	
11th	32	f	43	f	39	f	
12th	27	f	40	f	38	f	
13th	24	f	42	f	39	f	
14th	40	c	40	r	42	r	s
15th	33	c	35	c	34	c	
16th	31	r	37	r	42	r	
17th	39	c	42	c	41	c	r
18th	39	c	40	c	39	r	
19th	38	c		f	44	f	
20th	24	f	38	c	34	c	
21st	32	c	40	r	38	c	
22d	33	f			47	c	
23d	34	r	39	r	38	r	
24th	27	c			44	f	
25th	41	f	48	f	45	f	
26th	32	f		f		f	
27th	34	f		f		f	
28th	28	f	44	f	39	f	
29th	31	f	49	f	44	f	
30th	34	r		r	33	r	
31st	40	c	39	c	35	c	

JANUARY.	Thermometer at Sunrise.	Weather.	2 o'clock, P. M.	Weather.	Twilight.	Weather.	Change of weather during the night.
1st	33°	c	°	c	°	c	
2d	39	r	47	r	50	r	
3d	34	c	30	f	30	f	
4th	19	c	24	c	24	c	
5th	16	s	22	c	20	c	s
6th	18	c		c	19	c	
7th	1¼	f	29	f	29	f	
8th	26	c	41	c	38	c	
9th	20	f	45	f	39	f	
10th							
11th							
12th	60	c	70	f	70	c	
13th	36	c		c	35	c	
14th	30	c	36	f	35	f	
15th	28	f	38	f	36	f	
16th	26	f	48	f	45	f	
17th	50	r	63	c	59	r	
18th	58	c	69	f	66	f	
19th	67	c	67	c	65	c	
20th	57	r		c	54	c	s
21st	26	s	27	f	26	f	
22d	15	f	27	f	28	f	
23d	16		30		26		
24th	17	c	32	c	29	c	
25th	19	c	30	c	28	s	
26th	34	c	42	f	30	f	
27th	19	c	32	f	30	f	
28th	21	c	40	c	38	c	
29th	28	f	39	f	35	f	
30th	32	c	32	r	35	r	
31st	30	c	44	c	40	c	

FEBRUARY.	Thermometer at Sunrise.	Weather.	2 o'clock, P. M.	Weather.	Twilight.	Weather.	Change of weather during the night.
1st	37°	r	33°	s	33°	s	
2d	28	f	49	f	40	f	
3d	27	f	53	f	48	f	
4th	36	f	54	f	53	f	
5th	30	f	60	f	57	f	
6th	37	f	62	f	54	f	
7th	34	f	57	f	44	c	
8th	28	c		c	37	c	r
9th	34	c	42	c	40	r	
10th	39	c	42	c	42	c	
11th	42	c	46	c	45	f	
12th	42	c	40	c	40	c	
13th	34	c	42	f	43	c	
14th	39	c	62	f	64	f	
15th	63	c	71	c	68	c	
16th	62	c	59	c	54	c	r
17th	41	r	41	r	39	r	
18th	31	f	49	f	43	f	
19th	40	r	52	r	42	r	
20th	46	c	61	f	55	f	
21st	43	r	61	c	59	c	
22d	59	c	66	c	62	c	
23d	56	c	77	c	48	r	
24th	57	c	62	c	62	c	r
25th	51	c	63	c	61	c	
26th	35	f	39	f	37	f	
27th	27	f	44	f	48	f	
28th	38	f	54	f	39	f	

the corn is well soaked, and weather warm, it comes up and gets out of their way before they can again collect on the surface. When I wish the corn sprouted quick, I make use of warm water. Hot water will prevent it from vegetating.

WM. R. SMITH, *Sen't.*

Diary of the Weather at Fort Monroe, Old Point Comfort, for February, 1834.

Month	Thermometer. VII. A. M.	II. P. M.	IX. P. M.	Winds	Weather	REMARKS.
1st	39	38	33	N.	Rain.	Snow, 10 P. M.
2d	32	52	37	N. W.	Clear.	
3d	34	45	39	W.	"	
4th	39	54	50	S. W.	"	
5th	37	52	50	S.	"	
6th	48	51	48	N. W.	"	
7th	48	52	35	"	"	
8th	33	40	37	N.	Cloudy.	
9th	36	42	41	N. E.	Rain.	
10th	40	47	43	"	"	
11th	40	51	43	N. W.	Clear.	
12th	40	40	36	N.	Cloudy.	
13th	37	42	40	S. W.	"	
14th	41	56	57	S.	Clear.	
15th	59	63	61	"	Cloudy.	
16th	58	42	44	N. W.	Rain.	
17th	45	46	39	N. E.	"	
18th	39	47	41	N.	Clear.	
19th	44	55	53	N. E.	Rain.	
20th	49	51	46	W	Clear.	
21st	50	52	51	S. W.	"	
22d	54	55	54	S. E.	Cloudy.	Dense fog.
23d	60	62	59	N E.	"	Rain, 6 P. M.
24th	57	59	57	"	"	
25th	52	54	48	"	"	
26th	36	42	38	N.	Clear.	
27th	37	56	46	S.	"	
28th	45	54	48	S. W.	"	

CHEAT AND SPELT FROM WHEAT.

To the Editor of the Farmers' Register.

February 19*th*, 1834.

Sir,—Mr. James M. Garnett, in a late address to the Fredericksburg Agricultural Society, says, "he would as soon expect a sparrow's egg in hatching, to produce a Rhinoceros, as a grain of wheat to produce cheat," or I suppose spelts. This is strong language, and proves (at least) the fixedness of his opinions on this much controverted subject. Now I, Mr. Editor, will not use as strong language, but my opinions are as decided, that both wheat and oats *do* degenerate, and become cheat and spelts. Nor can I allow the opinion to be absurd, (even in the absence of facts to sustain it,) because it is a fact well known, that both animals and vegetables do (under certain circumstances,) change their character and appearance, or in other words degenerate. It will not be contended, that either the one or the other, ever undergoes an *entire* revolution, or becomes something utterly unlike itself: Nor will it be conceded that cheat, or spelt, is *wholly* unlike wheat or oats. They may be of a different species, but are of the same genus. I cannot consent either to yield my opinions to your experiment [in No. 2:] for I cannot allow that you, or any one else, can know the particular causes that produce the degeneracy; and therefore, thousands of experiments might fail to bring about an operation which (I think) nature effects every year. But my principle object, is to state two facts (for which I will vouch,) to sustain my opinions. The first is this. A very fine sample of wheat, with no other defect in it but the presence of some spelt, was carefully picked over, and every grain of spelt (as was supposed) taken out of it—but to be more certain, the sample was shaken and turned over, when many more grains of spelt were observed. This induced the gentleman to examine these grains minutely, when to his astonishment, one side of the grain was decidedly spelt, whilst the other appeared to be very fine wheat. For this fact, (as I said,) I will vouch. The 2nd fact is this—a house took fire in the neighborhood of several stacks of wheat, so near as to produce apprehension they might be burned. To save them, they (or some of them,) were pulled down and removed to an adjoining field. On the spot where these sheaves were placed, a very thick growth of wheat, came up—but the next year, when it headed, there was not one solitary head of wheat, but the heaviest crop of cheat ever seen. Now, Mr. Editor, if wheat never turns to cheat, what became of all those grains which were shattered out when the fire took place—can you suppose that those stacks were stacks of cheat, or that they contained a *great deal* of cheat, which overshadowed the wheat, and prevented it from maturing? This would be altogether too groundless a notion to be relied on. The truth is, I have been astonished to hear, that any one doubted the degeneracy of wheat, to cheat or spelt—because I have every year of my life, for the last twenty-three, (as I think,) witnessed facts, as conclusive as I have stated above—and indeed, until your paper appeared, never heard there was a difference of opinion on the subject. By the way, I would ask you, or any of your correspondents—are you or they certain cheat will vegetate at all? for I am not. But I do not assert that it will not.

These remarks may possibly serve to keep up the discussion, in regard to these subjects—when possibly, the truth may be developed to the satisfaction of all. In the mean time, I will look on, and see what good may be extracted from it.

Yours, A FRIEND.

[We know that the seed of cheat *will* vegetate, and produce their kind. The following experiment was not made to ascertain this fact, (of which we had never entertained a doubt, notwithstanding the many expressions of opinion to the contrary—) but for the purpose of observing and comparing the appearance of the several plants, throughout their growth. In the fall of 1832, three adjacent rows were sown severally with the seed of wheat, cheat, and spelt. The different plants, though having a strong general resemblance, could be readily distinguished, when thus viewed together, from the time they were one or two inches high. The green spires of spelt came out of a short red boot, or sheath, which rose but a little above the surface—and the green leaves were something in appearance, like those of young green sward. The young plants of cheat, were of a rusty or reddish green; and during the next spring, their leaves were observed to be covered with a fine down, which though scarcely perceptible by the eye, was plain to the touch—and by which the plant could be easily distinguished from the smooth leaved wheat. It is readily conceded, that the result of the experiment (reported in No. 2,) which is referred to by our friend and correspondent, does not furnish conclusive or positive proof. The testimony, is merely negative, or indirect. Five or six alleged causes of the supposed change, were made to operate, without producing a single head of cheat by their combined power. The facts also brought to sustain the other side of the question, however strong they may be, only

serve as indirect, or circumstantial evidence. The positive proof will be furnished by one indisputable fact of a plant of cheat, or spelt, being traced throughout its growth from a seed of wheat. Of the two proofs adduced by our friend, the first was not witnessed by himself, and his confidence in its truth, is founded on the high character of the gentleman who observed and informed him of the fact. There are few better grounds for confident belief—and we are far from underrating them in this case: but still, there might have been a mistake, either from imperfect observation, or imperfect recollection. The second fact is subject to no such doubt, and moreover, is sustained by either similar results (though differently produced,) observed by other persons. But however strong may be its testimony, or unaccountable the result, on any other grounds than those of our correspondent, the proof still is incomplete.]

CURE FOR THE BOTS OR GRUBS IN HORSES.

To the Editor of the Farmers' Register.

If you will excuse the subject, *(for although graceless,* it is valuable not only to agriculturists but to all classes, using that valuable animal the *Horse,)* I send you a remedy I used while our coals were brought to market in road wagons, which obliged us to use a great number of horses; and I never knew it fail of giving relief, in from one to five minutes.

Pour out half a gill of spirits of turpentine into the hand, and rub it on the breast of the horse while suffering; let it be applied to the hollow or pit of the stomach, just at the point where the neck joins the breast, on a space six to eight inches in diameter. The relief is certain, if the grubs have not already cut through the coats of the stomach.

SEASON FOR CUTTING DOWN WOODLAND.

To the Editor of the Farmers' Register.

As one of your subscribers, I am pleased with your Register, because I think it will do much good throughout the country. Every thing which contributes to throw light upon any subject, any way connected with agriculture, will add to the benefit of society—therefore, I will make one or two suggestions by way of inquiry, (as I do not recollect to have seen it mentioned in the Register, or any where else,) whether it is better to cut down new land in the summer, or winter? Is not the strength of the soil carried up by the ascending sap? if so, is not the soil reduced by cutting off the growth, when the sap is at its highest? From a small experiment recently made, the crop was better on the land cut in the winter; though I am not certain, that the difference was produced by the difference in the times of clearing. I considered the land equal before it was cleared. Both lay from 12 to 18 months after it was cut—with every thing upon it. P. P.

JERUSALEM ARTICHOKES.

From the London Farmers' Magazine.

"I was determined to prove whether or not they could be cultivated to greater advantage than the potatoe, as *food for cattle.* One sack was consumed by a young calf at hand; it ate them with avidity, and improved on them. I took the other two sacks and planted them in the midst of a five acre piece of potatoes. I set them whole without cutting, measuring correctly an eighth part of an acre; the produce was in proportion to 640 bushels per acre, —the potatoes 327 bushels. The following year, the memorable one of 1826, I planted half an acre on a piece of thin gravel, old tillage land, in its regular course of preparation for a vegetable crop after wheat; they maintained their verdure through that extraordinary dry summer, and produced 150 bushels; but the potatoes by the side of them were completely set fast; they never formed a bulb. The year following I set an acre on part of the same kind of soil, but of better quality; it produced 570 bushels, *without any dung.* An half acre on the same land, with the usual quantity of dung for turnips, produced 290 bushels (a bad compensation for eight loads of excellent dung.) This present season, an acre on the same land (part of my turnip-fallows) produced 576 bushels; but the wet state of the soil when taken up, and being a vegetable of uneven surface, which causes the soil to adhere to it more than to a potatoe, renders it difficult to come at the exact quantity. From an experiment I made of washing a sack, I can safely assert, I have 530 bushels of clean roots; whilst the vegetables on our flat gravels do not equal this by full 50 per cent. in value, except the potatoe, which produced 308 bushels on the same soil. I never could raise more in favorable seasons.

"The cultivation of the artichoke is the same as of the potatoe, except that it requires to be set early—not later than March; if laid above ground all winter, it is proof against the severest frost. When once cleaned, no weed can live in its dense shade; horses, beasts, and sheep, consume it with avidity; pigs prefer a potatoe to it in its raw state, but prefer the artichoke when boiled or steamed. It attracts the game in a most extraordinary way; they resort to its shade in autumn; it forms one of the finest covers in nature. We are so fortunate as to have but little game in our lordships; I do not recollect ever having seen even a Swedish turnip bitten by a hare or rabbit, notwithstanding they will consume the artichokes left by the men in securing them.

"If potatoes can be profitably cultivated as food for cattle, compared with Swedish turnips, mangel-wurtzel, the sugar beet, &c. (which I much doubt,) the artichoke is vastly superior to them. The expense of culture is no more; it is not liable to be injured by frost; can be taken up at pleasure; it produces at least 30 per cent. more, and on poor land full 50 per cent.; *is far more nutritious,* and leaves the land perfectly clean. The only objection that can be urged against their cultivation for cattle in competition with potatoes is that they require more care in taking them up. The frost not acting upon them so as to destroy vegetation, what are missed will, of course, grow amongst the succeeding crop, but I have found very little inconvenience in this respect."

GAMA GRASS—CONTRADICTORY REPORTS, AND THEIR EFFECTS.

Notwithstanding the very high estimate made of the value of Gama Grass by many persons, there are others, whose opinions are entitled to great respect, who pronounce it to be worthless, and that "no stock will eat it, unless in a state of starvation." It is not strange that opinions so directly opposed should be formed upon slight and imperfect observation of any new facts, when nothing deserving the name of an experiment has been made. But the attention of so many persons having now been drawn to this subject, it may be ex-

pected that careful and accurate experiments will be made, and that such reports will be made to the Farmers' Register next autumn, as will leave no ground for doubts as to the proper value of this grass.

A friend and highly esteemed correspondent, alluding in a private letter to such contradictions, (in various matters,) says, "though I am as willing as any body to believe what I wish to be true, these contradictory statements make me much of a skeptic in regard to every thing I either hear or read; and I am confident they have the same—perhaps, a greater effect—upon other people. The inevitable consequence is, to aggravate the senseless prejudices against what is called 'book farming,' which prejudices it is the duty of all the real friends of husbandry to counteract."

We are well aware that the many contradictory and erroneous opinions which are presented in agricultural journals, furnish a subject for ridicule, and cause many to decry these periodicals. We deny, altogether, that such censure is well founded—and maintain, that a journal of this kind would be faulty, and wanting in usefulness, if it did not exhibit the contradictions in opinion that exist, however false one side (or perhaps both) may be. If there were no such publications, these discordant opinions would not the less exist—and for want of the means for communicating and comparing them, the most erroneous might be received, and acted upon, for a century. An agricultural journal does not create, but simply makes known such contradictory opinions and statements—and by making them known, and inducing discussion and experiment, serves, soon or late, to dispel errors, and establish truth. Even if the editor of an agricultural journal was so highly gifted as to know which opinions were false in all such controversies, he would not, by refusing them publicity, aid either the establishment of truth, or the extension of correct agricultural practice. And if he presumed to make the attempt, with no better powers of discrimination than we possess, the true opinion would often be excluded for the false. Provided therefore that false statements are not intentionally made, a periodical like the Farmers' Register will best attain its object by drawing forth all opinions that have extensive influence and operation, however contradictory they may appear.

TO CORRESPONDENTS AND SUBSCRIBERS.

The first article signed "SMEATON," and several others which appear in this number, would have been presented in No. 9, but for the miscarriage and temporary loss of a package containing them, when transmitted to the publisher.

The several communications on the culture and management of tobacco with which this number is enriched, will go far to remove the impression that the Farmers' Register is not suited to the cultivators of the Middle region of Virginia. If some of the farmers and graziers of the mountains will follow the example of the tobacco planters, they will in like manner make our work serve their purposes, and supply their peculiar wants. There are many and increasing indications however, that the general usefulness of this publication is becoming more known, and that opinion is acted on in other states, as well as in the more remote parts of Virginia. A number of extra copies of this number will be published, and may be bought separately at 50 cents each, or twelve copies for $5, paid in advance.

Correspondents are respectfully requested to send their communications in plain and legible writing. From inattention to this humble, but important requisite, perplexity, and trouble, and expense are often incurred, and yet without our being able always to render justice to the writers. It is not that we want beautiful manuscripts, nor even very fair copies; but merely ask what is legible and plain, however many may be the erasures and alterations. The most practised writers, and often the most capable pensmen, are generally those of whom printers have most to complain.

When payments for subscriptions are sent by letter, it is desirable that the county, or town, in which the subscriber resides, should be named.

It is intended to furnish, at the close of the volume, a supplementary sheet containing a full list of our subscribers, with the counties and states in which they reside. To make the list perfect, it is desired that any existing errors in the directions to subscribers may be corrected. Many such errors have been made by hasty and illegible entries of names in the letters of our subscribers, or their agents.

COMMUNICATIONS RECEIVED TOO LATE FOR NO. 10.

Concise Directions for the Cultivation and Management of Tobacco—On Draining and Cultivating Lowgrounds—On the Manufacture of Potash—A Buckingham Farmer—On the Necessity and Means for Legislative Aid to Agriculture—A poetical piece has been received, which we have not published, because its appearance in the Farmers' Register might furnish ground for misconstruction. The manuscript will be held subject to the order of its author, as his address is not known.

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